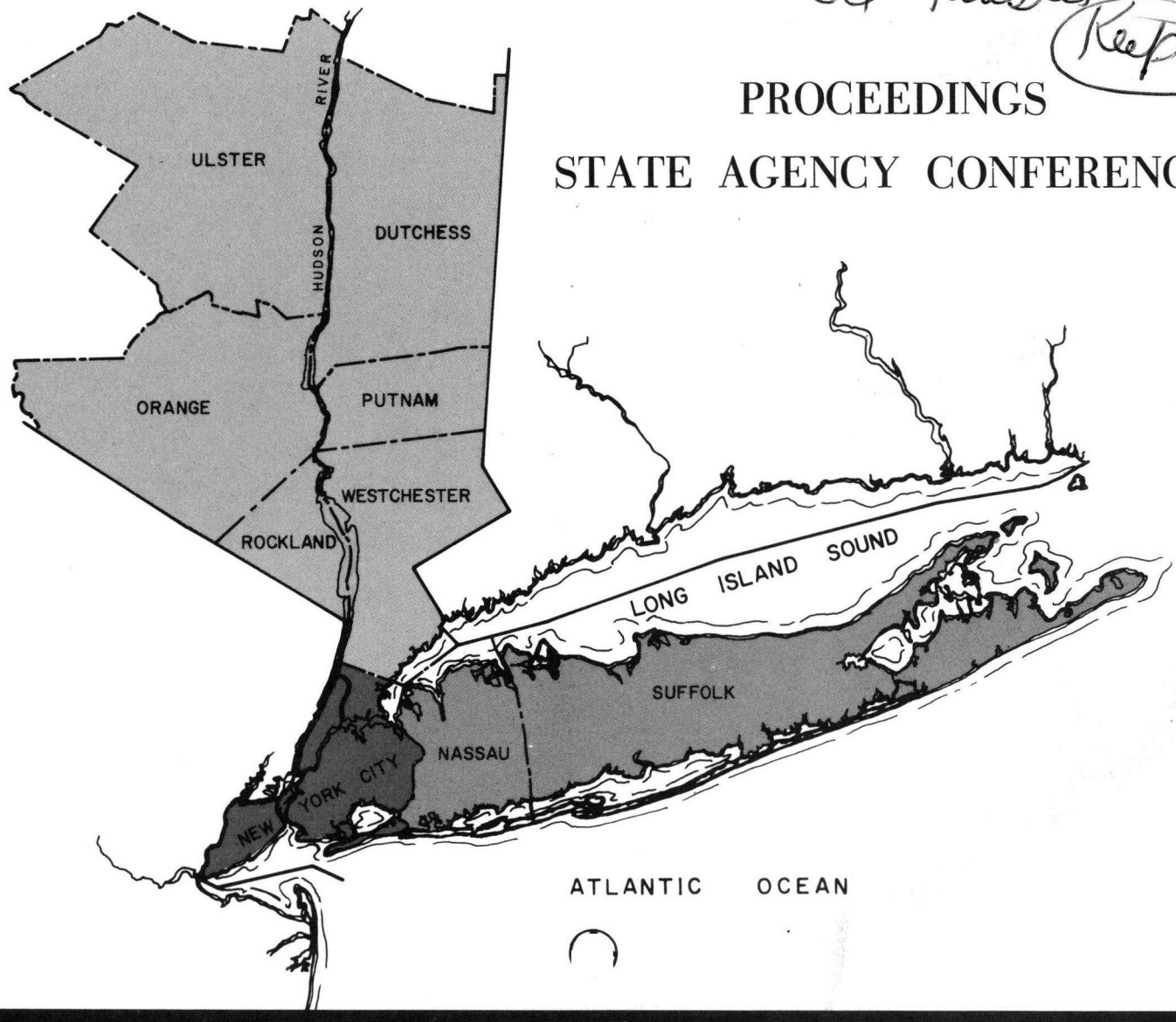
Temporary State Commission on the Water Supply Needs of Southeastern New York



PROCEEDINGS
STATE AGENCY CONFERENCES

November 1, 1972

Albany, New York

TEMPORARY STATE COMMISSION

ON THE

WATER SUPPLY NEEDS

OF

SOUTHEASTERN NEW YORK

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TEMPORARY STATE COMMISSION
ON THE
WATER SUPPLY NEEDS
OF
SOUTHEASTERN NEW YORK

STATE AGENCY CONFERENCES

NELSON A. ROCKEFELLER
Governor

EARL W. BRYDGES
Temporary President of the Senate

PERRY B. DURYEA, JR.
Speaker of the Assembly

November 1, 1972

Albany, New York

SOUTHEAST WATER SUPPLY COMMISSION

E. Virgil Conway, Chairman

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John J. Santucci
William J. Schickler
Robert C. Wertz

Robert D. Hennigan, Executive Director

STATE AGENCIES

Foreward

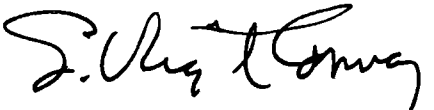
As part of its program the Southeast Water Supply Commission held a series of conferences with state agencies. The purpose of these conferences was to inform and educate the Commission, and to develop a strong interface with existing agencies with water supply responsibilities.

In preparing for the presentation to the Commission, it was suggested that the following items be covered:

1) Interest of the agency in the water supply needs of southeastern New York,
2) Statutory authority of the agency (i.e., regulation operation, etc.),
3) Ongoing activity of the agency directly related to the mission of the Commission,
4) Reports, data, etc., available for the Commission, and
5) Suggestions or recommendations of the agency relating to the study, the mission, findings or recommendations of the Commission.

A verbatim record was made of the conferences. This publication is an edited version of the transcripts. The participants have been given the opportunity to review the minutes and to make any changes deemed desirable.

The Commission greatly appreciates the contributions and the fine spirit of cooperation of the state agencies. They are making a real and substantial contribution to the program of the Commission.



E. Virgil Conway, Chairman

COMMISSION STAFF

Robert D. Hennigan, Executive Director
Emanuel Bund, Special Counsel
Irene W. Baker, Public Affairs
David A. Duffy, Administrative Assistant
Karen M. McMahon, Secretary
Karen D. Manion, Stenographer

Paul W. Merkens, Director of Engineering Studies and Analysis
Stephen C. Lackey, Assistant Director of Engineering
Harold F. Breon, Water Resources Engineer
Barbara A. Lester, Stenographer

David E. Buerle, Director of Management Studies and Analysis
Leslie Van Derzee, Research Associate
Jeffrey H. Brewer, Research Assistant
Robert W. Redmond, Staff Attorney
Evelyn E. Ruffinen, Secretary
M. Eileen Campbell, Stenographer

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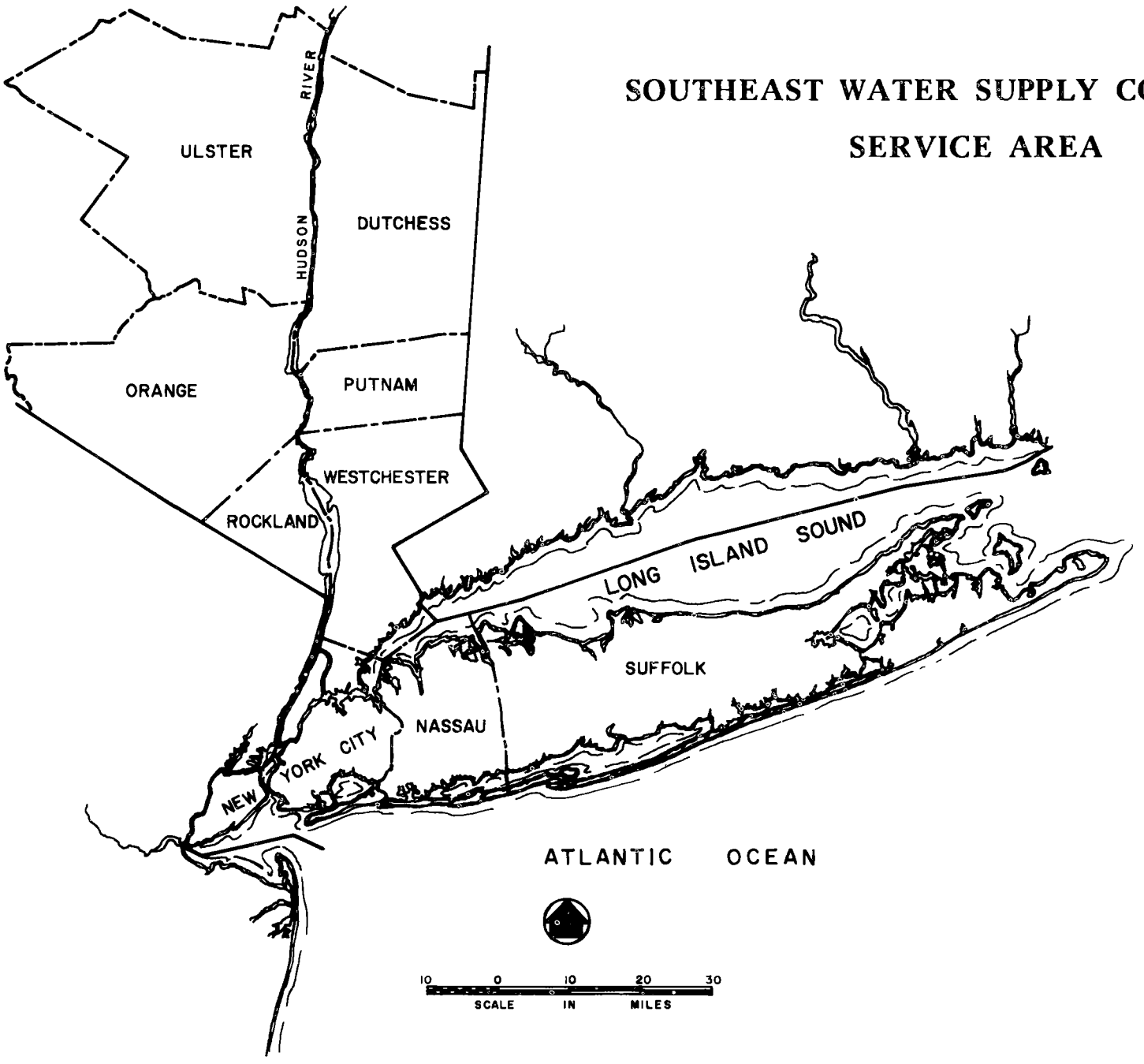
SCHEDULE

STATE AGENCY CONFERENCES

Agency	Date	Place	Representatives
Env. Facilities Corporation	10/14	41 State Street Albany, New York	Arthur Handley, Vice-President
Dept. of Transportation	10/14	41 State Street Albany, New York	Joseph Stellato, Director, Waterways Maintenance Henry Zwiak, Regional Waterways Maintenance Eng.
Department of Health	10/27	41 State Street Albany, New York	John Bumstead, Director, Bur. of Pub. Water Supply Gilbert Faustel, Chief, Design Section Samuel Syrotynski, Water Operation Section
Office of Planning Services	10/27	41 State Street Albany, New York	Charles Crangle, Assistant Director
Department of Commerce	11/30	30 Wall Street New York City	Leonard Pritchard, Assistant Director State Technical Services Program
Department of Environmental Conservation	11/30	30 Wall Street New York City	Edward A. Karath, Regional Engineer Edwin L. Vopelak, Director, Bureau of Regulation
Public Service Commission	12/1	30 Wall Street New York City	Robert Mulligan, Chief, Water Bureau John Guastella, Deputy Director, Water Bureau
Atomic & Space Development Authority	12/1	30 Wall Street New York City	James Cline, Chairman

SOUTHEAST WATER SUPPLY COMMISSION
SERVICE AREA



ATOMIC AND SPACE DEVELOPMENT AUTHORITY

DECEMBER 1, 1971
New York, New York

ATOMIC AND SPACE DEVELOPMENT AUTHORITY

CONFERENCE

OPENING REMARKS

CHAIRMAN CONWAY: This is the last of a series of meetings with various state agencies and divisions of state governments that are interested and involved with the water problems of Southeast New York. Bob and I have met on an informal basis and in some cases, just Bob with various state agencies in a preliminary way. We felt that for the input into the Commission's work it was vitally important that the Commission itself meet with each of the various state agencies involved. We are very pleased to have with us today James Cline, Chairman of the Atomic and Space Development Authority of the State of New York.

PRESENTATION

MR. JAMES CLINE, Chairman–Atomic and Space Development Authority of the State of New York: I am pleased to appear today before the Temporary State Commission on the Water Supply Needs of Southeastern New York to discuss specific items suggested by the Commission and additionally to respond to any questions which you may have concerning our program.

The Authority, since its inception, has been vitally interested in the ways in which atomic energy could beneficially used to augment the water supply needs of southeastern New York.

Our earlier studies in 1962 were of relatively large scale projects combining nuclear generating facilities and sea water desalting capability. These studies indicated that water produced by desalinization, although benefiting materially from its combination with a

nuclear power facility, was at that time still not competitive economically with alternative water sources for Long Island.

We then sought in light of the water shortage conditions on Eastern Long Island to ascertain whether a smaller facility could through a multiplicity of purposes be capable of producing water in relatively small quantitites on an economically practicable basis.

These studies lead the Authority, working cooperatively with the Long Island Lighting Company and the Riverhead Water District, to begin project definition of a relatively small facility capable of producing one million gallons of water per day by multi-stage, multi-effect flash evaporation, 2500 kilowatts of electricity, and concurrently of manufacturing a variety of reactor created radioisotopes useful in medical therapy and diagnosis. In late 1969, preliminary engineering of such a facility was completed.

In addition to providing water to an areas of continuingly relatively short water supply, the project was intended to serve as a pilot plant for larger facilities to meet the region's needs. It would provide information on the performance of such facilities on waters having characteristics typical of that in the metropolitan area and provide experience in the technology of the necessary post treatment of the high purity water to make it palatable to the consumer.

Prior to committing this reserach and demonstration project for construction, the Authority decided to explore the environmental and economic benefits associated with other possibilities for producing pure water in conjuction with power plant operations. For example, the coupling of a power generating heat source to a wastewater renovation facility.

The Authority currently has underway studies with respect to such a combination power and wastewater renovation complex under a grant from the Water Quality Office of the Federal Environmental Protection Agency.

In this concept, heat from the power generating facility is first used to raise the temperature of the waste treatment processes. This accelerates these processes and makes the overall treatment more effective. The water will be treated to a high degree of purity by such processes and, if necessary for its intended use, distilled to produce ultra pure water. Such a combination facility should not only lead to improved wastewater treatment, thereby minimizing waste released to the environment, but also make possible the re-use of the recovered water.

The study, which has been underway for a few months, is intended to determine which sewage treatment processes are most suitable for use in such combination projects, how nuclear power facilities can best be integrated into the overall system and what the potential economic and environmental benefits of recycle of high quality water are as compared to the desalting of sea water.

If the study, which should be completed by mid-1972, shows sufficient environmental and economic advantages, we would seek to undertake a demonstration project.

Under another portion of the New York Power Program, the Authority's activities include the selection, acquisition and making available of sites for nuclear power plants and related facilities.

In our siting activities in the southeastern portion of the State, we are seeking to locate such sites so as to make possible the utilization of part of the heat from such power facilities for water production purposes.

The economical production of large quantities of water through desalting or wastewater renovation process will probably require that they be undertaken in conjunction with large power plants; preferably nuclear plants which could provide the necessary heat and energy at appropriate prices.

In addition, we are in the initial phases of studies of the location of major power generation facilities off-shore to meet the electric power needs of the southeastern portion of the State. In this work we will be examining whether desalinization equipment could be practically integrated into such offshore facilities.

Our earlier studies of the siting and design of nuclear-water production plants and the preliminary design of the small multi-purpose demonstration facility of one million gallons per day capacity are available for review by the Commission's staff.

In response to your request for information as to the statutory authority of our agency, our basic legislation is set forth in Sections 1850 through 1870 of the Public Authorities Law. Section 1854 contains the purposes and specific powers of the Authority. Those powers which are most pertinent to the mission of this Commission include: a) To participate in the construction and operation of nuclear facilities for the purpose of desalinization or distribution of water, including the providing of sites and nuclear fuel for such facilities; b) To engage in research and development programs in the atomic energy field; c) To participate in the construction and operation of developmental nuclear power facilities; d) To provide features of nuclear power plants and associated facilities to the extent required by the public interest in development, health, recration, safety, conservation of natural resources and esthetics; e) To provide sites for the construction and operation of nuclear power plants and related faciliteis; f) To provide services required for the development and use of atomic energy.

Under the foregoing powers we can engage in research and demonstration projects in furtherance of either desalinization or wastewater renovation as techniques for meeting future water supply needs.

In addition, with respect to major installations to meet these water supply needs, we can provide the sites for such combination facilities as well as the desalinization and/or wastewater renovation components of the complex.

Under our program, which is a cooperative one with the State's power generating entities, it is contemplated that the power generation facility would be provided by one of the State's power generating entities.

We have appreciated the opportunity to be helpful to the staff of the Commission in its work and would be pleased to provide any further information as to the details of our program that you would find helpful.

DISCUSSION

CHAIRMAN CONWAY: Thank you very much, Chairman Cline. There has been testimony before this Commission that from a technological point of view there is no current way in which, if you eliminate mineral industrial water and other undesirable minerals from our wastewater, you can also eliminate any bacterialogical development—do you concur with that?

MR. CLINE: Well, the whole thrust of this is that we end with a high purity product which is distilled, and in distillation you are bringing over essentially pure water. This is why we have gone this route.

Let me explain why it's simpler to distill this highly treated renovated water than sea water. One of your limitations in sea water distillation equipment is that you have 33,000 parts per million of salt. Keeping it in solution, keeping it within bounds and treating it is quite a problem.

This, again, is what this study we have underway is seeking to demonstrate, that the distillation equipment, if it were dealing solely with this secondarily treated, highly processed waste water, would be a lot less expensive and a lot more effective. So, it is our hope that the study will show that this combination would show lower costs.

One of the problems in sea water distillation is the building up of salt concentration and trying to operate the equipment at levels near where the salt would come out of solution.

CHAIRMAN CONWAY: Also, has an efficient solution been found for the problem of brine disposal?

MR. CLINE: Well, in these multi-purpose plants you are pumping a lot of water and the reintroduction of the brine makes only a small change; within the range of the naturally occuring variations in saline content. For instance, within the variations you would naturally find across Long Island Sound. All I was driving at is combination with the power plant helps the brine disposal situation.

CHAIRMAN CONWAY: I don't understand why that would help if you have desalinization. I understand that if you are just making power the water is used essentially as a coolant. There is no loss except for evaporation loss. You are essentially putting back what you are taking out. But, if you are at the same time distilling water, isn't there a heavy brine concentration?

MR. CLINE: Well, let me first place one thing in perspective. Your typical desalination plant taking in 33,000 parts per million sea water will produce product water of about ten parts per million, and for each gallon of product water will typically produce another gallon of blow-down which is in the range of 66,000 parts per million.

This quantity, let's say it's a hundred million gallons a day in product water, and therefore a corresponding amount of brine when compared with the very large volumes of cooling water that are flowing through the plant is a small number. The return water is only a few per cent higher in salt concentration than the water flowing into the plant.

The test we have sought to apply is to make sure that we only consider cases where the salinity of the water released was within the range of the naturally occurring variations of the waters.

CHAIRMAN CONWAY: Now I understand the point. Are dissolved solids completely eliminated in the distillation process?

MR. CLINE: Essentially you are down to ten parts per million. It's well below usual levels. In fact, you have the problem that it is tasteless.

MR. CLINE: But, through the technology that is normally used in water mangagement, you can restore taste by either aeration and/or blending, and/or chemical additions.

MR. HENNIGAN: Have you undergone a change of approach? I get the impression that you are now emphasizing the combination of nuclear plants with wastewater renovation rather than sea water desalinization?

MR. CLINE: We have participated in a number of the desalinization studies. Also, we participated in the one that was done jointly by the States, the Federal Government, and the City of New York, which is yet to be published. In any event, we feel that we have the technology and the costs of desalinization down so that we can, at any time, tell you about what it is going to cost you.

One thing I want to point out is that we are in a period of very serious escalation in costs in many major construction projects. It is affecting power plants and everything else, and data on major desalinization plants even a few years old can be quite misleading. To answer your question, we feel tht we know where the economics of desalinization come out. In this Federal Report which is yet to be published it is recommended that a demonstration project take place in the New York City metropolitan area.

This is really not technology on the shelf to be called down the next time there is drought. There is work to be done here, both to assure that the facilities will work on the kinds of water that are naturally found in this area in terms of the other contaminants as well as the natural constituents, and also in treating this water to assure that it is compatible with the water system and it attains consumer acceptance.

What we thought we should do before we embarked upon that, is look at something which to our knowledge nobody has looked at in great detail, which is whether wastewater renovation and recovery for reuse didn't make a lot of sense.

What we have in mind here is a number of possibilities. One is maybe in the early years it's use for recharge in those areas where recharge would make sense. For many industrial purposes it would be quite valuable, much purer than the natural water. Also, as part of our thermal pollution protection work in connection with power plants, we are looking at a number of evaporative cooling systems.

For one thing, nobody has ever run any of these systems on salt water at the scale of interest. There is very serious doubt that you can without adverse ecological impact due to the release of that salty moisture containing trace amounts of salt.

CHAIRMAN CONWAY: Wasn't there a study done in Southern Florida by Florida Power & Light using these towers? The problem was there would be a salt water fog if you used salt water to cool your power plant.

MR. CLINE: Yes. I can quantify that for those who haven't read the report. The problem is than an evaporative tower, that's the type of tower they are talking about, would consume about twenty million gallons a day of water. In releasing that much water, there is necessarily a small amount of carry-over from the salt that is contained within it, no matter how you control it. They were estimating the release to the atmosphere of somewhere between twenty to four hundred pounds of salt per day.

One of the interests we have is in looking at the alternative systems to the direct release of heat in saline water (areas such as those in the southeastern sector of the state); one approach is to go to these evaporative systems. You already have a freshwater problem in the southeastern sector, and we don't want to compound it by adding units with the daily demand of twenty million gallons of freshwater. So, one of the possible applications of this wastewater renovation concept would be to provide make-up water for such towers, for environmental reasons.

MR. HENNIGAN: Isn't there a move toward wastewater renovation; trying to deal with 30,000 parts per million of dissolved solids in sea water versus probably a thousand or less in wastewater?

MR. CLINE: Yes. I would believe that it is probably much easier to deal with.

MR. SCHICKLER: You have mentioned several studies; one is just using desalinization for water supply. There is also a study to determine the use of this process for reclamation of wastewater?

MR. CLINE: It's a separate study, and in it we are combining a power plant and a wastewater renovation facility, which would involve primary and secondary treatment, using the power plant to provide heat to the sewage treatment process which is a quite new concept. It would be a new sewage treatment plant.

We're going to raise the temperature to increase the reaction rates and effectiveness of the sewage treatment plant. Then we are going to take the highly treated effluent from these processes, and use it in certain cases for certain purposes such as industrial use. For introduction in the water supply system, we would have a final distillation step.

MR. SCHICKLER: Do you have any idea when that study will be out?

MR. CLINE: Mid-'72. It's now in the stage where the processes are being selected.

We're doing two things here. Sewage treatment plants today have normally dealt with the sewage at the temperatures at which it naturally occurred. Therefore, the sewage temperatures go down in the winter and they come up in the summer. The plants are designed for the worst conditions; as a controlled process.

We're looking at both stablizing and controlling the temperature of the process, thereby optimizing the plant. We're also looking at raising the process to temperatures which would not naturally occur in sewage as it is received in the plant. This would allow processes which have not been found practical because the sewage didn't appear at these temperatures.

MR. ANDERSON: What temperatures are we talking about, what range?

MR. CLINE: Well, we're going into the range of 120°–140° F. degrees.

CHAIRMAN CONWAY: Do the recycling plants at Tahoe, California and Chanute, Kansas, use a distillation process?

MR. CLINE: I don't believe so. They just highly treat sewage, there is no distillation.

CHAIRMAN CONWAY: What you're adding to this is a distillation step that would produce a different product than they were able to produce at Chanute and Tahoe?

MR. CLINE: Correct. I think for public acceptance that this additional distillation step is a good idea.

CHAIRMAN CONWAY: Certainly the New York State Health Department would never okay a Cahute or Tahoe operation because you don't take out your dissolved minerals.

MR. CLINE: Yes.

MR. FORSTER: You point out the difficulty of handling salt water with 33,000 parts per million of salt. You say that if you process sewage it's a much simpler

operation; but this would have to be done at the sewage disposal plant and then mixed with upstate water.

If you had your distillation plant at Hunt's Point, you would recycle it back in the system, perhaps pumping it up to Rye or Kensico and mixing it with the Catskill and Delaware water.

MR. CLINE: Well, we would not consider an existing facility such as Hunt's Point. We would be considering a whole new complex which had a specially designed primary and secondary sewage treatment process. We would expect that the type of high temperature plant I am describing would produce, after a secondary treatment, a purer product than you would get out of more conventional systems. I don't really know what the performance would be on this type of plant.

The effluent would then go through the distillation step, and at that point I really wouldn't know if you have to introduce into a reservoir or just directly into the water system.

MR. FORSTER: But you point out that distilled water lacks any taste. If you can mix it with normal water would it be acceptable in terms of taste?

MR. CLINE: Yes, but here the problem is either treatment or mixing. In other words, there is a technology of water treatment that is available anyway. It might be cheaper to just go ahead and treat the water at the place where it is produced and introduce it into the water system.

MR. QUARTARARO: So, the idea basically then is to build new sewage treatment plants with this controlled temperature process and also make a power generating station at the same time. It might be more economical to do it that way than it would be to treat the sewage the way we are now.

MR. CLINE: Yes. Well, I think our other objective here is to finally end up with the use of the water product. This we see is a mechanism for getting a water product of quite high purity.

CHAIRMAN CONWAY: Would your estimated cost be made available to the

Commission? I mean, at what point do you think you would be able to tell us how much one million gallons a day is going to cost?

MR. CLINE: I'm afraid not until fairly close to the end of the study. Late '72.

CHAIRMAN CONWAY: Do you have any indication that this would be substantially less than desalinization? Desalinization studies indicate a cost of $500.00 to $600.00 per million gallons. Recycling studies not involving distillation have indicated costs somewhere up in that area, maybe $300.00 to $400.00.

It would be very helpful to the Commission if we would get some advance figures.

MR. CLINE: Well, what I can do is see what sort of projection our staff could make at this time. Since we haven't picked a process, it would have to be understood that it would be quite hypothetical.

MR. HENNIGAN: One of the issues before this Commission that has been raised continously and was raised during the drought was; is there some alternative to the further development of upland freshwater sources?

Is it at all economically feasible within the foreseeable future to develop additional freshwater, either through wastewater reclamation and treatment, or through desalinization? Does it offer any hope at all for meeting the future water needs? I think the generally accepted opinion at this time is that it doesn't. This is probably twenty or thirty years away, but at this time it doesn't offer water in terms of the economics.

CHAIRMAN CONWAY: The Commission's solutions for water supply in southeastern New York would have to depend on the evidence we have before us. Presently it is not economically feasible either to desalinate or to recycle and produce drinking water. Now, you tell us that perhaps it is feasible if it is combined with a power plant and that is why it is so importnat that we have at least the economic projections.

MR. CLINE: I would need to know what your costs are for further increment supply by conventional means of water and over what periods you would intend to write them off. It seems to me as we look at the State as it develops, that upstate areas are going to require additional water resources to supply their own needs and expansion. I think it is unfair to compare any of these alternative techniques which are admittedly more expensive with simply just what the next increment of investment might be for a reservoir. It seems to me it is a much more complicated problem than that. So I don't know how much of a gap there is between these alternatives before they would become economical. I'll have the staff look at this further, and see if we can give you any additional figures on what desalinization would cost today. Also, we will see if we can infer some potential costs for this process.

CHAIRMAN CONWAY: This would be very helpful. Commissioner O'Brien has a question.

MR. O'BRIEN: I sometimes get the impression that implicit in your thinking is some sort of tie in of desalinization with the availability of need for a power plant you now have.

I wonder if since the early 1960's when the OSW started their work, and all the contracts were give out in ten or twelve different directions as to sources of energy for water desalinization, that the most economical that has so far been proven is the membrane system that gives you, a cost of about $.38 a thousand gallons?

Yet, if you are sitting there with a responsibility for atomic power plants with the heat available, I can see the thrust in that direction. But, do you have any available figures as to this thought which came up in Suffolk County in one of our first hearings as to the chance of recycling the water before it is returned to the aquifer and upgrading it? This would help sovle their long-range problems as to increasing needs.

Do you have any cost figures as to relative costs between the treatment of wastewater and recycling, using a membrane as against the heat-based approach?

MR. CLINE: No, I don't, unfortunately. We have focused on what we see as the most likely approach for meeting Suffolk County's kind of problem; one of future installation of wastewater treatment plants. We see atomic heat as materially augmenting those wastewater processes. We have focused on distillation as the final step because we felt that technologically this was the process about which the most was known and offered the most predictable product results.

MR. O'BRIEN: In recent reports any breakthrough with large scale cost reductions in fairly large plants have been along the membrane route. I know that the Office of Saline Water has devoted considerable amounts of money in the direction of contracts to people like G.E., Solar, Westinghouse, etc. I just can't believe that flash evaporation which is a two-step process is the way to accomplish it.

MR. CLINE: The dominant focus certainly in the Federal studies and in our work has been the plants of large size. Two desalination techniques of principal interest was distillation processes and membrane processes in instances where you can get input water of relatively low salinity on the order of 2500 parts per million.

We don't really have, as we see it, that case in New York. The only place you would have feed water in this salinity range would be somewhere in the estuarine portion of the Hudson where salinity varies as the Hudson flow varies in the course of the year. So as far as we are concerned for sea water desalting, it's distillation; maybe vertical tub distillation or multi-stage flash evaporation. Quite a bit of money has been spent in membrane work. It has been focused, to my recollection, principally on smaller plants, and I believe that when scaled up and applied to salt water rather than brackish water the energy costs of these approaches are still higher than that of a very large distillation facility power plant combination. I believe that's the conclusion of any of the reports I have seen.

MR. O'BRIEN: What I'm really asking is that removing salts from water is one problem technically, and trying to remove final amounts of bacteria is quite a different technical objective; but, cost-wise can you analogize between them?

MR. CLINE: Well, this is the purpose of the study so that we can make comparisons between water production processes. It seems to me there are obvious environmental benefits to this recycling concept. The question is; is it competitive cost-wise or maybe better than desalinization? Both we and the Environmental Protection Agency think that there is a potential that it is, but we are not far enough along to be able to say that with certainty.

MR. O'BRIEN: I think the key to it for us is that we are introducing heat control into sewage treatment in a way that has never been done before. The hope is that we will come out of the sewage treatmetn steps with a high purity product such as achieved by distillation.

MR. CLINE: Distillation has the benefit as has been pointed out here, that it does finally remove the other constituents that would not normally be removed in the treatment process.

CONCLUSION

CHAIRMAN CONWAY: This has been a fascinating presentation. Thank you very much, Chairman Cline.

APPENDIX A

ATTENDANCE

SOUTHEAST WATER SUPPLY COMMISSION

Commissioners
E. Virgil Conway, Chairman
H. Clark Bell, Vice Chairman
Neil H. Anderson
Herman Forster
Anthony Gioffre
Thomas J. McInerney
Gerald R. O'Brien
Anthony M. Quartararo
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William J. Schickler

Staff
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Irene W. Baker, Public Relations
David A. Duffy, Administrative Assistant
Leslie Van Derzee, Research Associate

ATOMIC AND SPACE DEVELOPMENT AUTHORITY

James Cline, Chairman

Observer
Samuel Gofseyeff, New York Board of Water Supply

DEPARTMENT OF COMMERCE

NOVEMBER 30, 1971
New York, New York

DEPARTMENT OF COMMERCE

CONFERENCE

The Department of Commerce did not appear, but submitted the following statement.

STATEMENT FOR THE
TEMPORARY STATE COMMISSION ON THE WATER NEEDS OF
SOUTHEASTERN NEW YORK

by: L. Pritchard, Assistant Director, State Technical Services Program, New York State Department of Commerce

Thank you for inviting the New York State Department of Commerce to make some comments about the industrial water supply needs in Southeastern New York being studied by your Commission. It is the mandated duty of the Department to promote industrial expansion, commercial activity, and the well-being of our citizens. Since the Southeastern region of the State is such an important area, water is a major factor to be considered.

Commissioner Moylan of the Department of Commerce has long been involved in various agencies concerned with water resources management and you may be assured of his continuing interest.

We all know that water is a precious resource since it is basic to life itself. But, it is not generally appreciated that optimum development of our water and other natural resources presents one of the greatest challenges of the 20th century. This is true because of the compelling needs in our democratic society to consider economic, social, psychological, political, and educational factors and expectations.

We must also consider the obvious geophysical variables in water resources planning and development.

New York is the leading manufacturing State in the nation, surpassing all other states in number of manufacturing establishments, production of manufactured goods (as measured by value added by manufacture), number of people employed and variety of goods produced. Approximately 70% of the State's business, commerce, and people are located in the area under study by this Commission.

One of the prime requirements for a favorable industrial site is an adequate water supply; without it most industries could not continue to exist nor could new industry be attracted. This Southeastern area accounts for 44% of industrial and commercial water use and the industry of the area, particularly small business, commerce and light industry will continue to expand and grow.

Projected increases in industrial water use indicate around 13% more will be needed in 1990. The fastest growing industries in Southeastern New York—machinery and electrical equipment—are not heavy water users in processing. In fact, actual processing accounts for only 28.5% of all industrial water use, while 52% of total intake is used primarily for cooling and condensing purposes. This latter use of water is expected to increase greatly.

Statistics indicate that in 1968, only about 14% of the water used by New York State manufacturers came from public water systems and the remaining 86% came from "private" systems.

If ground water supplies on Long Island become depleted at a faster rate than is now apparent and salt intrusion becomes significant, increasing attention and funds may have to be diverted to the processing of ocean water.

Power generation need is expected to double here in the next ten years. Water of good quality and large quantity will be needed in these plants for steam generation and cooling purposes. The most accurate measure of power needs can be found in population projections as evidenced by the correlation between the two. Although not as accurate, the projections of employment provide the best available indication of future non-household electric power needs.

People are the State's most valuable resource. Over the long haul, the key to New York's long term growth is to be found in a vigorously expanding job market. The dynamic element in creating new jobs is private business. Not only are the direct needs for water in industrial uses great, but also the residential needs of the people who manage and are employed in these plants are crucial. These same people will not be anxious to come into an area that is plagued with restrictions on the use and enjoyment of water, or one in which the water is trained with pollution.

In the heavily urbanized Southeastern region the trend toward urbanization is expected to continue and the demand for water for household use alone may increase more

than proportionately. It is not inconceivable that by the year 2000 the demand for water for household use will more than double. Increased leisure time will require multi-purpose use and control of water resources. A conservative estimate of population growth for New York State indicates a population of about 23 million by the turn of the century. The 1970 State population was more than 18 million people and by the year 2020 the State's population may approach as much as 30 million. Many of these people will be located in this Southeastern region.

A comprehensive study of the public water supply for the City of New York and Westchester County indicates that existing and potential water supplies will be able to meet the estimated demands 80% of the time, or four years out of five, until 1995. In a drought year, however, such as those in the late 1960's there would be a deficiency of 100 mgd in 1980, 500 mgd in 2000 and 1,000 mgd in 2020.

Your task is of great urgency because it is estimated that a lead time of 10-15 years is necessary to provide an adequate water supply.

Whatever solutions this Commission eventually decides upon, the New York State Commerce Department will help in any way we can to assure an adequate water supply in the Southeastern region of New York State.

PROJECTION METHODOLOGY

The following are the steps taken to arrive at the projections of water use in manufacturing in the Southeastern New York region:

1. The Southeastern region's percent of total State employment in each two-digit manufacturing industry in 1968 was computed.

2. These ratios were applied to U.S. Bureau of the Census data on total water intake by New York manufacturing industries to obtain total water intake for these industries in the Southeastern region. (The apparel and printing and publishing industries were omitted because water consumption in these industries is negligible and no data is published.

3. The ratio of water intake to employment for each industry in the State was computed for the years 1959, 1964, and 1968. The trend in these ratios was then extrapolated to 1990, in most cases by a straight line regression method. In a few cases in which this method yielded unreasonable results, logarithmic regression was employed.

4. The projected ratios were then applied to 1970 employment data for Southeastern New York, 1980 industry-employment data of the New York State Department of Labor and to 1990 extrapolations of these 1980 projections to obtain estimates and projections of water use for these years.

WATER INTAKE BY MANUFACTURING INDUSTRIES
SOUTHEASTERN NEW YORK[1]
1968-1990

		Total Intake[2] (billions of gallons)
1968 (estimated)		249.6
1970 (estimated)		237.3
1970 (projected)		251.2
1990 (projected)		268.1
Percent change:	1970 – 80	+ 5.9
	1980 – 90	+ 6.7
	1970 – 90	+13.0

[1] New York City and Nassau, Suffolk, Westchester, Rockland, Putnam, Dutchess, Orange and Ulster Counties.

[2] Represents only the actual amount of water taken into manufacturing plant; gross water use would be larger than this figure to the extent that the water is reused.

Source: New York State Department of Commerce estimates and projections, based on data published by the U.S. Bureau of the Census and the New York State Department of Labor.

DEPARTMENT OF ENVIRONMENTAL CONSERVATION

NOVEMBER 30, 1971
New York, New York

DEPARTMENT OF ENVIRONMENTAL CONSERVATION

CONFERENCE

OPENING REMARKS

CHAIRMAN CONWAY: This is one in a series of meetings the Commission is holding with various State and Federal agencies that influence either directly or indirectly water supply problems. We are delighted to have Mr. Edwin Vopelak, Director of the Bureau of Water Regulation and Mr. Edward Karath, Regional Engineer, Water Management Planning Unit, as representatives of the Department of Environmental Conservation. We look forward to your presentation to the Commission.

This Commission is attempting to develop an important recommendation with regard to the water supply needs of Southeastern New York State. We need the input from your department, since not only is water supply for Southeastern New York a regional question, but is of state-wide significance, particulary as to source, development, and use.

PRESENTATION

MR. EDWARD KARATH, Regional Engineer, Water Management Planning Unit, Department of Environmental Conservation:

I. Introduction–DEC Authority

The Department of Environmental Conservation (DEC) appreciates this

opportunity of providing information on the Department's program to the Temporary State Commission on the Water Supply Needs of Southeastern New York. This statement will cover suggested items of Commission interest.

The Department of Environmental Conservation was created on July 1, 1970 by Chapter 140 of the Laws of 1970. The Department combines in a single agency all State conservation functions, including water and air quality control, solid waste disposal, land management, fish and game conservation, environmental health, and water resources planning. These formerly were administered by the Conservation Department, the Department of Health, the Water Resources Commission, the Air Pollution Control Board, the Pesticides Control Board, the Natural Beauty Commission, and other State agencies. However, the Department of Health is still responsible for the sanitary aspect of public water supplies and for intermunicipal public water supply studies under Part V-A, Article V of the Conservation Law.

The Department is responsible for carrying out the State environmental policy as stated in the creating statute (Section 10, Appendix C, p. 61) which says in part "... to conserve, improve, and protect its natural resources and environment and control water, land, and air pollution ..."

Among the basic functions, powers, and duties of the Department and Commissioner, many relate directly and indirectly to public water supply (Appendix D p. 62).

The Department is organized into three main program areas, Environmental Quality, Environmental Management and Field Services. Environmental Quality includes the Divisions of Pure Waters, Air Resources, and Quality Services. Environmental Management includes the Divisions of Lands and Forests, Fish and Wildlife, and Resource Management Services. At the field level most of the Department programs are administered through 9 regional offices, 3 of which are in the Commission study area at New York City, New Paltz and Ronkonkoma, Long Island. Department staff services are provided by 4 offices in Albany, Planning and Research, General Counsel, Communications and Education and Administration.

II. DEC Interest in Water Supply Needs of Southeastern New York

A. Examples of Water Supply Concerns

The Department has a broad range of interests in water supply needs of Southeastern New York. Since water is a basic natural resource, the utilization of water can

have profound effects on other resources and can raise many environmental issues.

Long Island is an excellent example of this. Overpumping for public water supply has caused a groundwater depression in about 11 square miles of Queens County resulting in saltwater intrusion and poor groundwater quality. Depressed groundwater levels have also resulted due to installation of sewers in areas previously using individual disposal units. These have caused lowered lake levels and stream flows and decreased freshwater outflow to the marine environment with potentially serious consequences. In Nassau County the supply and demand are almost equal. High nitrate concentrations have been found in water supply wells, possibly due to the individual disposal systems. As a result it is necessary to develop deeper aquifers to maintain water quality. Since groundwater is the only source available on Long Island, there is a need to consider recharge as a means to maintain supply. Other water supply aternatives include use of New York City water in Queens instead of deteriorating groundwater supplies and the possibility of Nassau and Suffolk Counties developing upland supplies in conjunction with New York City and upstate communities served by the City. These proposals have environmental overtones.

The water supply situation on Long Island involves several units in the Department, particularly the Bureau of Water Resources Planning, the Bureau of Water Regulation, the Division of Fish and Wildlife, and the Bureau of Marine and Coastal Resources.

Another example of environmental concern with water supply relates to the operation of New York City reservoirs in their Delaware system. Conservation releases from Neversink, Pepacton, and Cannonsville reservoirs are inadequate to maintain satisfactory fisheries downstream from the dams. The unbalanced pattern of releases to satisfy the 1954 Supreme Court Decree causes additional problems in fish and wildlife management. Other recreational uses and water quality management are also complicated by the release schedules. In other parts of the New York City system no conservation releases are made from Rondout, Schoharie, and Croton Reservoirs, resulting in unsatisfactory stream environments downstream from the impoundments.

Finally, a third example of Department interest relates to proposed new source developments for public water supply. Reservoir proposals, in particular, are controversial on an environmental basis. The Adirondacks, which is one of the most productive water areas in the State, is also one of the most sensitive for reservoir developments. This is well illustrated by the agitation caused by revelation of the Gooley site potential. As a result legislation was enacted to prohibit reservoir construction on the Upper Hudson and other tributaries by the State and regulating districts. In addition to the broad environmental interest, the Department has a more direct concern because of its responsibility for administering the Forest Preserve lands in the Adirondacks through the Division of Lands and Forests.

These three examples illustrate the variety of Department interests and the possible involvement of different units with the Department. This presentation is limited to three program areas that are particularly relevant to the Commission's mission, water resources planning, public water supply regulation, and the Pure Waters Program. As the Commission work proceeds, representatives of the Department will be glad to discuss specific matters relating to all Department programs.

B. Water Resources Planning

1. Regional Water Resources Planning Boards

Since the early 1960's the State has had an active water resources planning program in the former Conservation Department and Water Resources Commission and now in this Department through the Bureau of Water Resources Planning. The thrust of this program, as provided in the Conservation Law, is toward regional planning by major basins or sub-basins in cooperation with regional water resources planning boards consisting of 7 local residents representing various water-related interests. Eleven boards are in operation in the State at present. None is in the Southeastern New York area although some local interest has been shown in the program. The Upper Delaware Board has been established in the Delaware Basin in New York State, and Boards are in the formative stages in the Lake Champlain, Mohawk, and Upper Hudson Basins which have been considered as potential water supply areas for the New York Metropolitan region. The objective of the program is to develop comprehensive, multi-purpose water and related land resource management plans for the respective regions and an overall State water management plan.

2. V-A Studies

Concurrently with multi-purpose water resources planning by this Department and the regional boards, the State Department of Health has conducted inter-municipal public water supply (V-A) studies. This single-purpose program is coordinated between the two departments and results in the development of projects adequate for present and reasonably foreseeable area-wide public water supply needs. Under this program, studies have been completed for New York City and all the counties in the Commission study area except Dutchess County.

3. Comprehensive Sewerage Studies

Also concurrently, single-purpose comprehensive sewerage studies have been completed for much of the Commission area. This program administered by the Division of Pure Waters, is designed to encourage comprehensive planning for treatment facilities within drainage basins and areas with common sewage problems. The studies develop economical projects for the present and future collection, treatment, and disposal of sewage from one or more municipalities or any portion of them.

4. Reconnaissance Studies

The 1960's drought added new urgency to water resources planning in the State and in late 1965 planning was accelerated statewide by emergency funding. Reconnaissance studies were completed by consultants for four major areas of the State including the Hudson–Mohawk–Long Island and the Delaware–Black–St. Lawrence–Lake Champlain Areas. These studies gave particular attention to water supply needs and opportunities for water supply development. In the Hudson-Mohawk-Long Island Area study, major consideration was given to large multi-purpose reservoir potentials, a barrier dam on the Hudson River in the vicinity of the TappanZee Bridge, major groundwater supplies and other water supply alternatives in the Hudson-Mohawk Basin.

Other Department activities include preparation of a report on the water resources of the Adirondack Region for the Temporary Study Commission on the Future of the Adirondacks; a study of Long Island's freshwater resources availability and use; and a study of Long Island's freshwater hydrology in cooperation with the U.S. Geological Survey.

In addition to these efforts, the State is involved in a multiplicity of interstate water programs because New York is a headwaters State. The drought of the 1960's resulted in a proliferation of special Federal interstate planning activities. The major studies in which the Department has been involved that include the Commission area are the following:

5. North Atlantic Regional Water Resources Study

A framework study authorized by Congress in 1965 covering 13 states and the District of Columbia. The study is in its final stages now and includes formulation of alternative framework comprehensive plans incorporating 17 water need categories in the 7 sub-basins of New York State, including Long Island and the Hudson-Mohawk River Basin.

6. Northeastern United States Water Supply (NEWS) Study

The NEWS study is a water supply study authorized by Congress in 1965 for the northeastern states. The study objective is to provide a coordinated plan for essential water development, including an action program and guidelines for Federal participation in water supply projects. Three parts of the NEWS study now in progress relate directly to the water supply needs in Southeastern New York. These include investigation of engineering feasibility; legal, economic, and organizational aspects; and environmental effects of regional water supply alternatives for the Northern New Jersey-New York City-Western Connecticut Metropolitan Area.

7. Delaware River Basin Commission (DRBC)

The DRBC is a continuing program in conjunction with New Jersey, Pennsylvania, Delaware, and the Federal government for protecting, planning, developing, and managing the Basin's water resources. Of particular interest is a reappraisal of the water supply resources of the Delaware River Basin and service areas authorized by a Commission resolution in March, 1967. Chapters I-IV of the coordinating committee report, representing factual studies, have been completed and work is in progress on the remainder of the study.

8. Desalting Studies

Desalting is one of the water supply alternatives frequently mentioned for the New York City metropolitan area. The Department, in conjunction with Federal agencies, has participated in two studies aimed at investigating the desalting potential. The studies are in outgrowth of a 1966 assessment of the "potentialities and possibilities of desalting for Northern New Jersey and New York City." The first study completed in 1969 was made by Stone and Webster Engineering Corporation under contract with the Department, with funding and technical assistance provided by the Office of Saline Water, U.S. Dept. of Interior. The Study investigated the potential of desalting Hudson River tidal estuarial water with varying flows, salinities, and temperatures with delivery of product water to the New York City and northern New Jersey systems. The study used the electrodialysis process and a computer program was developed for plant and cost optimization. Since the study was completed, further investigations of alternative conditions have been made by the Department using the computer program as a tool.

The study indicates a total cost in the order of $0.53-0.66 per 1000 gallons of water delivered to Kensico Reservoir for a plant with an average annual output of 100 mgd. Differences in total dissolved solids content and temperature of the product water compared with other water in the New York City sytem would add blending costs.

The second study is in the report stage and consists of an appraisal of the potential for dual purpose nuclear power and desalting plants for the 1990 time period and beyond for the New York City Metropolitan Region. Cooperating agencies in the team study are the Department, New York City Board of Water Supply, Office of Saline Water, Atomic Energy Commission, and Consolidated Edison Company.

The preliminary conclusion is that desalting in conjunctive operation with existing water supply and energy source systems of New York City is potentially attractive and economic as a future water supply source. Additional information needed includes more detailed evaluation of environmental effects of brine effluent, advancements in engineering nuclear safeguards, pre- and post-treatment and plant operational factors.

Information resulting from these studies is or will be available to the Commission.

C. Public Water Supply Regulation

1. Public Water Supply

This program, administered by the Bureau of Regulation in the Division of Resource Management Services, is primarily for the equitable apportionment of available water resources among the various public water supply users of the State. Any person or public corporation authorized and engaged in, or proposing to engage in, the acquisition, conservation, development, use, and distribution of water for potable purposes, must submit

the proposed plans to the Department for approval. Each applicant must prove that his proposed plans are justified by public necessity, provide for the proper and safe construction of all work, provide for the proper protection of the supply from contamination or the proper treatment of the additional supply, are just and equitable to other municipalities affected and that they make fair and equitable provisions for the determination and payment of any and all legal damages to persons and property which will result from the execution of the proposed project. The water supply works, as constructed, also must be approved by the Department.

Additional important responsibilities under the Water Supply Law in specific cases are adjudication of water service rates charged by a municipality for outside service (e.g., New York City rates for water taken from its system in certain upstate counties) and Water Supply Reservoirs in the Forest Preserve. The Department must approve the construction of municipal water supply reservoirs in the Forest Preserve and oversee the construction, operation, and maintenance of such reservoirs.

The public hearings on applications have been expanded to include all environmental factors whenever it appears that the proposed development may have a significant effect on the environment. Environmental factors considered are aesthetics; fish and wildlife; soil erosion; sediment in streams; air, noise and water pollution; solid waste disposal; and the potential impact on services such as roads, schools, hospitals, etc.

2. Approval of Large Wells in Long Island Counties.

The purpose of this program is to protect and conserve the groundwater resources of the island. Department approval is required whenever the capacity of a proposed well or combination of wells to be used for any purpose except agricultural irrigation on the property exceeds 45 gallons per minute. Whenever the intended use is for cooling in a closed system (i.e., air conditioning equipment), then the applicant has been required by Department policy to return the water eventually to the pumping level through a recharge or diffusion well.

3. Registration of Well Drillers on Long Island.

The purposes of this program are to provide a means of control over all wells drilled on the island, to assure that applications are filed for any well under the jurisdiction of the Department, and to provide well data for future use in management of the water resource. Before installing a well, the driller must file a preliminary report with the Department. A permit for drilling the particular well is issued, and if the water is for public water supply or comes under the jurisdiction of "Large Wells" then the owner is notified that a separate application for approval is required. Once a well is completed, the driller must file a completion report with the Department. Currently, there are about 250 registered well drillers and in 1969 some 3000 well permits were issued.

D. Pure Waters Program.

The Pure Waters Program initiated in 1965 and administered by the Division of Pure Waters in the Department is aimed at cleaning up the waters of the State. The main element of the program is the $1 billion bond issue approved by the overwhelming majority of voters to pay the State's share and prefinance the Federal share of sewage treatment plant construction and facilities costs to meet the stream classification standards. Most of these funds have been spent or obligated during the last six years.

The program has also provided funds for State aid to municipalites for operating and maintianing sewage treatment plants; an automated system to monitor water quality in the State's principal rivers; expanded State research on water pollution control methods; comprehensive sewerage-needs planning; and industrial incentives. The program has made possible vigorous enforcement of State laws against water pollution and State and Federal action to eliminate water pollution by government institutions.

III. DEC Statutory Authority

The Department's basic statutory authority is the Environmental Conservation Law. The law, effective July 1, 1970, establishes a State policy for the protection of the environment, creates the Department of Environmental Conservation, prescribes the powers, duties, and functions of the Department, provides for the transfer of functions of other agencies, and designates certain other actions. The law also provides for a codification of laws relating to the Department that is presently required to be submitted to the Legislature by January 15, 1973.

Other existing laws that are of particular interest are the Water Resources Law, Article 12 of the Public Health Law, and the 1965 Pure Waters Bond Act.

A. Water Resources Law

The Water Resources Law, Article V of the Conservation Law, was enacted in 1960. The "Declaration of Policy" in Article V declares that the sovereign power to regulate and control the water resources of this State has been and now is vested exclusively in the State of New York, except to the extent of any delegation of power to the United States. It is

> "declared to be the public policy of the State of New York, in recognition of its sovereign duty to conserve and control its water resources for the benefit of all inhabitants of the state, that comprehensive planning be undertaken for the protection, conservation and development of the water resources of this state to the end that they shall not be wasted and shall be adequate to meet the present and future needs for domestic, municipal, agricultural, commercial, industrial, recreational, and other public beneficial purposes.

It is further declared to be the public policy of the state of New York that

(a) the acquisition, storage, diversion and use of water for domestic and municipal purposes shall have priority over all other purposes; and

(b) in addition to other recognized public beneficial uses and control of water as provided by this Article V or by any other statute, the regulated acquisition, storage, diversion and use of water for the supplemental irrigation of agricultural lands within this state is a public purpose and use, in the interests of the health and welfare of the people of the state and for their interest." (Conservation Law, Section 401.)

The Department is now the administrative agency charged with responsibility for administering the Water Resources Law (Conservation Law, Section 410). The general jurisdiction of the Department is to

"exercise its powers and perform its duties in any matter affecting the construction of improvements to or developments of water resources for thy public health, safety, or welfare, including but not limited to the supply of potable waters for the various municipalities and inhabitants thereof, the use of water for industrial and agricultural operations, the developed and undeveloped water power of the state, the facilitation of proper draingage and the regulation of flow and improvement of the rivers of the state." (Conservation Law, Section 404.)

The Department, to protect the interests of the State, is authorized to cooperate with appropriate agencies of the Federal government and with other governmental bodies and agencies (Section 426).

The Department may undertake comprehensive planning for the protection, control, conservation, development and beneficial utilization of the water resources of the State (Section 435). Article V, Part V, of the Conservation Law includes the concept of regional water resources planning and development on broad multi-purpose, regional, basin-wide dimensions.

Not only in the field of water resources planning but also in the equally important field of water resources management, the Department acts as the clearing house for virtually all water resources matters in the State.

The scope of the Department jurisdiction relating particularly to the work of the Commission includes the following statutory responsibilities:

(a) Water Supply–Conservation Law, Article V, Part VI, Sections 450-480. Apportionment of the water supply resources of the State among the inhabitants of the State. This includes licensing of well drillers on Long Island (Section 745) and the control of commercial and industrial wells on Long Island (Section 476).

(b) River Regulation–Conservation Law, Article V, Part IX, Title A. Section 580-600. River regulating districts may be created upon the approval of the Department for the purpose of constructing storage reservoirs to regulate the flow of a stream or river.

(c) Stream Protection–Stream Protection Law (Laws of 1965, Chapter 955) effective January 1, 1966. Requires permits from the Department for disturbance of certain stream beds, dredging and fill in navigable waters, and certain dams or docks.

B. Article 12 of the Public Health Law. The Law declares that it is the public policy of the State of New York (Section 1200):

"to maintain reasonable standards of purity of the waters of the state consistent with public health and public enjoyment thereof, the propagation and protection of fish and wildlife, including birds, mannals, and other terrestrial and aquatic life, and the industrial development of the state, and to that end require the use of all known available and reasonable methods to prevent and control the pollution of the waters of the state of New York."

The purpose of Article 12 is (Section 1201):

"to safeguard the waters of the state from pollution by: (a) preventing any new pollution, and (b) abating pollution existing when this chapter is enacted, under a program consistent with the declaration of policy above stated in the provisions of this article."

By this law, standards of quality and purity and classifications of the State's waters have been made in accordance with "best usage" in the public interest. Class AA and A surface waters may be used as a source of water supply for drinking, culinary or food processing purposes, and any other usages; Class B, C, and D surface waters may not be used for water supply for drinking, culinary or food processing purposes. Class GA ground waters are fresh ground waters which are best used as sources of potable water supply. Class GSA includes saline waters which may be used for conversion to fresh potable waters and for other purposes.

C. Pure Waters Bond Act

The Pure Waters Bond Act authorized the creation of a State debt of $1 billion for the construction, reconstruction, and improvement of sewage treatment plants and interceptor sewers. It also permitted the granting of up to 60 percent of the costs of such construction to local governments. The Act also allowed the State comptroller to issue and sell State bonds up to $1 billion subject to the State Finance Law. The Act was subject to a majority vote which it received in the November 2, 1965 election. Funds obtained under the Act have provided the financial basis for the State's Pure Waters Program.

IV. Ongoing DEC Activity Directly Related to Mission of Commission

The principal ongoing activities of the Department directly related to the mission of the Commission include the following:

A. Water Resources Planning

1. Coordination with the Corps of Engineers, North Atlantic Division, and other State and local interests in the NEWS study.
2. Participation in plan formulation for the North Atlantic Regional Water Resources Study.
3. Completion of the dual purpose nuclear power-desalting team study.
4. Water resources planning program in cooperation with Upper Delaware Regional Water Resources Planning Board that includes preliminary appraisal of potential for recreational use of New York City water supply resources and preliminary investigation of problems associated with reservoir releases.
5. Review and use of V-A studies.

B. Public Water Supply Regulation

Continuing administration of rules and regulations governing water supply applications. The following requirements have been adopted:

1. Required metering of all public water purveyors on Long Island.
2. Limiting pumpage in area of salt water intrusion or having potential for intrusion on Long Island.
3. Limit pumpage of industrial supplies to preserve supply on Long Island for public utilization and require return of uncontaminated water to aquifier from which it was pumped.
4. Require regular sampling program in specific uses to monitor changes in quality and/or salinity.

In addition, the Department is advocating the following:

1. Legislation to control groundwater withdrawals in critical upstate areas.
2. Reduction of pumpage in Queens County through expansion of use of New York City Water.
3. Establish policy for reclamation of treated effluent.

C. Pure Waters Program

Under the Pure Waters Program significant progress has been made on municipal and industrial sewage treatment plant construction, pollution surveillance and enforcement. The ongoing program also includes the following:

1. Local assistance to provide one-third of the cost of operating local sewage treatment plants.

2. A comprehensive county and regional sewerage planning program.
3. Extensive research in water pollution control methods and problems.
4. A statewide automatic monitoring network to keep major waterways under surveillance.

V. Available Reports and Data

A bibliography of 80 pertinent references relating to water resources in thy Southeastern New York region has been compiled by the water resources planning staff (Appendix E). A number have been forwarded to the Commission staff. The others are available for inspection at the Department.

VI. Suggestions and Recommendations

A broad range of engineering alternatives for water supply for the New York Metropolitan region have been investigated since 1965 in three major study efforts. These include the State reconnaissance studies in 1966, the V-A studies, particularly the New York City-Westchester County Study in 1966-67, and the NEWS study in progress. In brief, each study has had a somewhat different water supply focus. The reconnaissance studies considered water supply as part of multi-purpose development potentials and were limited to sources of water supply within each major drainage basin. The V-A studies did not consider multi-purpose aspects, but investigated water supply alternatives in more detail, including out-of-basin sources and possibilities for inter-municipal cooperation. The NEWS study of the New York Metropolitan region is considering the possibilities of regionalization of water supply from an engineering, institutional and environmental standpoint.

Although proposals differ in details, all three major engineering studies have validated the Hudson River as the next major source of water supply for the New York Metropolitan region. Utilization of the Hudson River will require major new reservoirs in the basin to provide additional river flow, changes in utilization of existing major reservoirs such as Great Sacadaga Lake, or diversions from other basins, and treatment. In considering the alternatives, the Department urges the Commission to give careful attention to the environmental considerations. Looking to the future strain on all our resources, we cannot afford to disregard the environmental impact and consequences of our actions.

Other factors which the Commission should consider in development of a water supply program for Southeastern New York are the following:

1. Multi-purpose use of water supply reservoirs is essential, including maximum recreational use of the reservoir itself and operation to achieve additional downstream benefits consistent with the water supply function. Suitable conservation releases must be

made to preserve and enhance fish and wildlife resources and maintain suitable water quality. For example, additional flows on the Hudson and Mohawk Rivers from upstream reservoirs operated for water supply withdrawals at Hyde Park could provide substantial fishery, water quality and other benefits at intervening points.

2. The interrelationship of water supply and water quality is important and must be recognized in any program. This is well illustrated on Long Island where disposal of sewage treatment plant effluent through ocean outfalls can have profound effects on ground water supplies and lakes and streams. The Long Island fresh water and marine environment is particularly susceptible to manmade changes and requries special attention.

3. The urgency for early action on major new source development for water supply for the metropolitan region is indicated by water demand projections for the New York service area and for Nassau County. Because of the lead time for major project development, which may be 10 to 15 years, water supply projects must be initiated soon to meet critical demands for 1980-1990 and beyond. The need for early action should not, however, override the important environmental factors.

4. Prior studies provide substantial information on water supply alternatives for the Commission. The department suggests that the reconnaissance study, V-A study, and NEWS study be used as a base of reference for engineering alternatives. the NEWS study also should provide essential information on the legal, economic and organizational aspects of water supply and some consideration of environmental effects. The Department believes the NEWS study will provide significant guidance to the Commission for its mission.

The Department is prepared to assist the Commission further and respond to specific requests and proposals to the fullest extent possible.

DISCUSSION

CHAIRMAN CONWAY: Thank you very much for an excellent presentation. I have a few questions, and I am sure the other members of the Commission have, too. This is an educational function, as far as the Commission is concerned. I must confess I was really uninformed as far as adjudicating rates is concerned.

MR. VOPELAK: This applies to New York City in particular. Under the Administrative Code of the City of New York, we have to adjudicate rates in case of dispute with upstate communities supplied by the City of New York.

CHAIRMAN CONWAY: Do you exercise that function and is it a constant process?

MR. VOPELAK: We are presently in the middle of a rate case. However, this is the first rate case that we have had involving the City of New York, in some sixty years. We also have other areas in the state where we adjudicate rates.

CHAIRMAN CONWAY: This is the first time you have been in the rates setting business for the City of New York. Vis-a-vis the other areas served by the City system. You say you require the metering of public water purveyed to Long Islanders. Do you require the users to be metered, or the purveyors to be metered, or both?

MR. VOPELAK: Preferably both. We require specifically that the individual consumers be metered, and in most cases we find that the purveyors are agreeable to metering the sources.

CHAIRMAN CONWAY: Why just Long Island?

MR. VOPELAK: Well, this is where we have the most critical problem with groundwater in the state, and we can have more control this way. Of course, it is generally agreed that metering is a means of saving water.

CHAIRMAN CONWAY: I am not so sure it is generally agreed. That is why the issue is before the Commission. A lot of people would argue on just the opposite side of the case.

MR. VOPELAK: With the City of New York, it is a good argument. As a matter of fact, we have done some studies within the city that would seem to indicate that metered consumers use more water than unmetered consumers.

CHAIRMAN CONWAY: I mean it is not quite as clear as your actual statement. That is one of the major issues that is before this Commission.

MR. VOPELAK: But generally speaking, we would recommend universal metering.

CHAIRMAN CONWAY: That is your position, not only on Long Island?

MR. VOPELAK: Not only on Long Island, but as a general policy.

CHAIRMAN CONWAY: I was a bit confused about the focus on Long Island. Since you have these controls throughout the state, why do you just require it on Long Island.

MR. VOPELAK: The water program is much more critical on Long Island than it is in other areas. In both Nassau County and Queens County, quantity and quality is a problem. Suffolk County is another probelm.

Of course, with the installation of sewage facilities throughout the island, the problems will become more and more critical, because there will not be the recharge of the effluent through individual septic systems. This water will be lost to the sea, generally.

CHAIRMAN CONWAY: You are advocating multi-purpose use of reservoirs. You mentioned conservation. Does this also include recreation, as far as the policy of the Department?

MR. KARATH: I don't know whether the Department has a specific policy. In our planning we have tried to incorporate all the purposes that fit into the operation of a reservoir.

CHAIRMAN CONWAY: I don't mean to be facetious, but after your presentation, it seemed to be dual purpose, rather than multi.

MR. KARATH: Well, there are purposes of flood control, water for irrigation, and power generation.

CHAIRMAN CONWAY: But you have not specifically taken a position on recreation?

MR. KARATH: There is no specific policy enunciated as such, let's put it that way. You are asking with reference to water supply?

CHAIRMAN CONWAY: Yes. As you point out, if the Hudson River is used, it will have to be at a minimum, a realignment of impoundments upstate, Sacadaga and others, and perhaps a new impoundment. Obviously a multi-use impoundment is more palatable to a broader group of the public than a single use impoundment.

MR. VOPELAK: In conjunction with our water supply approvals, we have acquired conservation releases where it is required.

CHAIRMAN CONWAY: The Vice-Chairman of this Commission is the Assemblyman from Ulster County, H. Clark Bell, who has made the point several times, that the water releases by the City of New York from their reservoirs in Ulster County aren't too well coordinated. They generally manage to release water just in time to wash the fish all the way down the stream before they have a chance to grow. In your judgment, has this been coordinated, or is Assemblyman Bell right? I think you alluded to that.

MR. KARATH: I was speaking more specifically about the Delaware system. There are some more severe problems, I would say, but there may be some instances, as you mention, that have occurred in Ulster County.

CHAIRMAN CONWAY: Well, he was making the point that a lot of the sportsmen, have complained about this not being coordinated. Do you suppose that it could possibly be coordinated?

MR. KARATH: Well, I think the Fish and Wildlife people and the city do try to coordinate it. It may not be possible at all times. Of course, the reservoirs are primarily being operated for water supply purposes. That is given priority, so if the water is needed, it is taken.

There is an instance in Ulster County on the Esopus Creek where first waters are diverted from the Schoharie Reservoir through Shandaken tunnel to Esopus Creek. I know this area is a sore point with local fishment.

There again, the City is operating its reservoirs for water supply and they use the Schoharie when they need it. You may have to live with some of these situations from this standpoint.

CHAIRMAN CONWAY: Is there a Department position on the use of the Adirondack watershed as far as water supply? As you point out, it is one of the major original sources.

MR. KARATH: It has never been spelled out officially in so many words. No, there has never been a statement put out. As a matter of fact, the Gooley controversy was at a time when the Water Resources Commission was in existence and in operation. You can correct me if I am wrong, Ed, but I don't recall that the Water Resources Commission ever came out with a policy statement on the Gooley site.

MR. FORSTER: I was wondering whether the present Administration of the Department of Environmental Conservation has a position with respect to Gooley Dam?

MR. VOPELAK: This was resolved before the organization came into being as it exists today, so I don't think there was ever really an expression of what the attitude of the Department was, as far as we know. We can tell you how indivduals feel, but not policy.

MR. HENNIGAN: May I interrupt? What you are saying is that the issue was foreclosed by the passage of the legislation which prohibited construction of the dam.

MR. KARATH: Right. It is a moot point, as far as the Department is concerned right now.

CHAIRMAN CONWAY: We of the Commission cannnot take that position because

likewise the Water Supply Act for 1905 would make much of our work moot. We have a broad field in which to recommend.

MR. KARATH: I can give you a personal opinion. There are alternatives to the Gooley Site, as you are well aware. I think there is some sentiment in the Department that perhaps redevelopment of the Hickley Reservoir should logically be done before the Gooley site or some other development is made in the Adirondacks. There are other reservoir sites, too, within the upper Hudson and Mohawk basins that have potential for development. There is the Schaghticoke site on the Hoosic River and the Fort Hunter site on Schoharie Creek. There are a number of others, but most of them would be more expensive.

CHAIRMAN CONWAY: Doesn't Schaghticoke site involve a real estate problem?

MR. KARATH: Well, they all involve problems of one kind or another.

I think you would have a trade-off of benefits on the upper Hudson from releases out of Gooley as contrasted with benefits, perhaps, on the Mohawk River from releases out of Hinckley Reservoir. As far as the Hudson River below the confluence of the Mohawk is concerned, I don't think it would make a great deal of difference whether it was coming from Hinckley or Gooley.

There is a fairly serious water quality problem on the Mohawk River, which treatment alone may not be able to solve. Altogether, I would say there is probably a more definite need for the augmentation of the Mohawk River than on the upper Hudson. Again, it is a factor to take into account, the multi-purpose aspect.

MR. HARDING: You said your study on desalting indicated you could get water at between fifty and sixty cents per thousand gallons delivered at Kensico.

MR. KARATH: Fifty-three to sixty-six cents.

MR. HARDING: Is it possible to get a copy of that report? I would like to get one personally and also as a member of the Commission.

MR. KARATH: Yes. I will send you a copy.

CHAIRMAN CONWAY: Would you also include that as part of the record, part of

the presentation as far as the official Commission record, in addition to providing Commissioner Harding with a copy. We would appreciate it.

MR. KARATH: Yes, certainly.

MR. HARDING: Does that take into consideration the removal of phenols and other constituents not normally removed?

MR. KARATH: Yes. There was a high degree of treatment provided, pretreatment of the water.

MR. HARDING: And you said that that would deliver a hundred million gallons. Is that the upper limit that you could deal with?

MR. KARATH: No the study actually was broader than that. It included four quantities: twenty-five mgd, fifty mgd, a hundred and three hundred. Three hundred was the upper limit. The costs I cited were representative of the one hundred mgd plan.

MR. HARDING: We are looking for, as I understand it, a half a billion gallons as a minimum quantity. Did your study indicate that you could get as high as five hundred million gallons into Kensico without causing undue trouble with heat, corrosion and so forth?

MR. KARATH: This is one area of the study that I don't think was explored thoroughly enough, and that is why I put in a qualification there. The study did not take complete consideration of some of the blending problems that might be involved, both in terms of having the capacity to accept the water, and also from the standpoint of the quality of product water from the desalting process.

MR. HARDING: The reason I am asking this question is, if the Commission should finally advocate the construction of reservoirs someplace upstate in the Adirondacks or in either the Hudson and Mohawk basin, there will be a large number of people who will say, "Well, why don't you desalt it," which from everything I have read so far is not practical in large volume. What we are talking about is more volume than any flow from all the desalting plants in the world combined. I think that is going to be used as a major argument against

anything this Commission might propose, if we should go to desalting. That is why I would like to study the report, and also the ramifications, outside of merely desalting the water.

MR. KARATH: I think that is one reason the report hasn't gotten widespread publicity, because of the concern that some people might misinterpret what is there.

CHAIRMAN CONWAY: That is five to six hundred dollars a million, right?

MR. KARATH: Right.

CHAIRMAN CONWAY: And you are considering a rate case that is asking a hundred and forty dollars a million, right, that is requested?

MR. KARATH: I think it is something like two or three times what the cost of some of the systems included in the NEWS Study.

CHAIRMAN CONWAY: Two would be generous. I thought in terms of three or four times. I take it from your answer to the question of Commissioner Harding that as far as the capacity, they didn't explore it much beyond a hundred million?

MR. KARATH: Well, let's say, in the study we did consider a three hundred mgd plan, but again this was an optimization study. It was mainly concerned with plant size and costing, and it was assumed that the system could take the water, which I don't think is entirely valid. I think it would be another cost item that would need to be added on.

Again, just to illustrate this, the product water would have two hundred and fifty parts per million total dissolved solids, which compares with, let's say, a hundred parts per million total dissolved solids in the present New York City system. There also would be a temperature difference. The product water from the desalting process would be at a higher temperature than the present New York City water. So you would have a cooling problem.

So these problems would have to be taken into account in further studies.

One of the main purposes of the study was to try to optimize plant sizes, and also to develop a computer program which could be used as a tool for additional studies. We have used that computer program to some extent ourselves. There are still a lot of questions that need to be answered.

CHAIRMAN CONWAY: From a professional background, do you think that five hundred million to a billion gallons a day from desalinization is really practical at this point in our technology?

MR. KARATH: No, I don't think so, not at this point in time.

CHAIRMAN CONWAY: You don't really foresee that we are close to being able to produce that quantity of water out of salt water with acceptable quality?

MR. KARATH: No, I don't. There is a great deal of interest in the reverse osmosis process; for instance, I think it would give more favorable cost figures. But even then, I don't think you can handle those quantities of water.

MR. SCHICKLER: I think you mentioned you were thinking of asking the Legislature for reclamation powers. I was wondering what you meant by that statements?

MR. VOPELAK: I don't think we were asking for legislation.

MR. KARATH: For a policy.

MR. SCHICKLER: What would this policy consist of? In other words, can you clarify that?

MR. VOPELAK: There isn't any policy yet. We are in the process of formulating a policy, and what will be involved we don't specifically know. There are still problems. They can remove nitrates and remove phosphates, but we probably still have 1200-1500 ppm of dissolved solids, which can create a problem in recharges.

So what our policy is going to be, I couldn't tell you at this stage. We are still in the very, very early formative stages of the policy development.

MR. SCHICKLER: In other words, this might be a possible policy in the future?

MR. VOPELAK: It could be. Not necessarily it could be within the next year or so, not necessarily somewhere in the distant future. As I say, we are still in the process of formulating this policy.

CHAIRMAN CONWAY: If you sewer Suffolk County, the effluent has to be dumped somewhere. This is the question that I quess you are raising in saying that it has got to be recharged in some fashion.

MR. VOPELAK: Nassau County is more critical than Suffolk County.

CHAIRMAN CONWAY: We haven't been to Nassau yet. How much of Nassau is sewered right now?

MR. VOPELAK: Offhand, I don't know. But we have had an indication of a decrease in groundwater elevation as much as seven feet due to the sewering that has occurred. So the potential for a problem is there.

CHAIRMAN CONWAY: In Suffolk you go down further than that, don't you?

MR. VOPELAK: It depends on what you want to do. There are alternatives. You can mine that water and decrease the size of the whole area. Maybe this is one of the ways to manage it. This is a possibility, sure.

MR. SCHICKLER: Well, Greeley and Hansen made a statement in their report that, as far as considering water supply aspects, that it wouldn't present a serious problem. But, it was mentioned that as far as conservation is concerned there might be some objections as far as drying up the streams and affecting the salinity of Great South Bay.

MR. VOPELAK: Yes, USGS as a matter of fact, has this as one of many alternatives in one of their recent publications. They do delve into this to some extent, if you want to become more familiar with some of these alternatives.

CHAIRMAN CONWAY: They are on an experimental basis, at least as far as recharging facilities for northern Nassau County?

MR. VOPELAK: In southern Nassau they have got a small installation where they are doing some recharge.

CHAIRMAN CONWAY: This is on an experimental basis?

MR. VOPELAK: It is not on a continuing basis; it is an on-again, off-again type of thing. They have done a little bit of it in Suffolk County as well. I understand that some of the smaller installations, where they don't have access to any good streams, are using recharge as the method of disposal. I understand that the Suffolk County office building complex is considering use of recharge.

MR. FORSTER: Has the Department or the Administration taken any position with respect to Tocks Island?

MR. KARATH: Well, New York State is, of course, a member of the Delaware River Basin Commission, and Tocks Island is included in the Commission plan. The state's position is in support of Tocks Island.

MR. FORSTER: Did I understand that it is your responsibility to require the reduction of pumpage in Long Island, specifically, in Queens, and substituting New York City Water?

MR. VOPELAK: This would be one of the alternatives to resolving the problem in Queens County. We have quite a depression, as indicated, it is about eleven to fourteen miles square, and I guess up to forty feet deep. About the only alternative that really is available is New York City water, as far as we can see, outside of some demineralization process whiccan get pretty expensive.

MR. FORSTER: Have you exercised any power now in limiting the amount of water which the private water companies operating in Queens can take from the Aqueduct which services both Queens and Nassau, or supplies both Queens and Nassau?

MR. VOPELAK: When it comes to private water supply, I don't know how we can really limit them. We have to follow them to take what they need to serve their consumers.

MR. FORSTER: Regardless of its effect on the residual groundwater?

MR. VOPELAK: Yes. We have great potential to regulate the industrial supplies that might come within that same area.

MR. FORSTER: I would like to ask your reaction again on this multi-purpose thing. At the Department of Health meeting, the question of the development of recreational uses for water supply reservoirs was raised. I pointed out at that time that the Department limited recreational uses to seaworthy rowboats and cut out everything else. Now, in your concept of multi-purpose use, would you go beyond this?

MR. KARATH: Well, I think we would. Of course, it would depend on the particular reservoir project.

MR. FORSTER: Well, to what degrees and in what areas?

MR. KARATH: Well, I would say the possibility of a full range of recreational use, additional boating, camping, swimming, perhaps this might be predicated on the treatment of the water supply. I think there are other reservoirs, public water supply reservoirs, that are being used in this fashion.

I think the full range of recreational use needs to be considered. Whether you can actually go that far, I don't know. It would be considered in the project plan.

MR. FORSTER: I was wondering what your philosophy was with respect to what they call multi-purpose use? The Department has sharply limited it, and I think correctly. Even though additional chlorine might overcome the hazard, they wouldn't want thousands of bathers in reservoirs, would they?

MR. KARATH: Well, you mentioned the Tocks Island Reservoir. Tocks Island is being considered for recreational use. I believe that includes swimming and other uses. It would also be used for public water supply. Part of this public water supply would be a diversion from Tocks Island into New Jersey.

CHAIRMAN CONWAY: Hinckley is multi-use right now, isn't it?

MR. KARATH: Yes.

CHAIRMAN CONWAY: Including recreation?

MR. KARATH: Yes, I don't whether it includes swimming or not.

MRS. BAKER: It does include swimming.

CHAIRMAN CONWAY: It does include swimming. Is that used for drinking in the city of Utica?

Mr. KARATH: Yes.

CHAIRMAN CONWAY: Direct take, not through the Mohawk River. They have a direct pipeline. That is just one example we pointed out. There are others of multi-use.

MR. SCHICKLER: You indicated three studies that should be reviewed. You indicated multi-purpose use of reservoirs included some concentration on Long Island areas. Specifically, what would you recommend on the Long Island area? Do you have any solutions or recommendations on how that should be handled, or is it just a question that we should consider the Long Island area?

MR. KARATH: Well, we don't have any specific recommendations to make at this time.

MR. HENNIGAN: Concerning rate cases, do you derive your jurisdiction from the Water Supply Act of 1905?

MR. VOPELAK: The Administrative Code of the City of New York.

MR. HENNIGAN: Are you a court of first jurisdiction or would you be a court of choice? I mean if the people wnated to appeal a rate case, could they take it directly to the Supreme Court rather than go to the Agency?

MR. VOPELAK: The indication is that if neither party can agree, then they come to us for adjudication of the rates. Then if they don.t agree after that, they can go to the courts.

CHAIRMAN CONWAY: They have to come to you if they don't agree?

MR. VOPELAK: If they can't agree, they have to come to us.

MR. HENNIGAN: The only alternative is an Article 78. But doesn't that put whoever is the plaintiff before the court in an Article 78 proceeding in a fairly tough position?

MR. VOPELAK: We can take the means that the City of New York used to derive their rates, we can accept the means that the upstate communities derive to refute the city's rates, or throw them both out and derive our own methods.

CHAIRMAN CONWAY: I know, but if they want to go into the courts, the court has to find out that you made a mistake on the facts, but that you were arbitrary, capricious, and unreasonable. That is a tremendous burden to overcome.

MR. VOPELAK: Right.

CHAIRMAN CONWAY: So it really means that you are the court, not only of original jurisdiction, but the court of last jurisdiction, in a sense, because our regular courts just don't have the opportunity of reviewing questions of law or fact, just if you are arbitrary, that is the sole test.

MR. HENNIGAN: You mentioned three things, the technical side, the institutional, and the environmental impact. May I emphasize the fact that in the charge to this Commission those are the three major elements. The charge to this Commission is to approach this problem from these three angles.

I would like to go into some of the other comments you made. One was the question of downstream releases, which has already been raised. There are conservation releases from the Delaware River reservoirs, which are acknowledged to be kind of small. If you are going to increase those conservation releases, this represents an additional demand on the Delaware supply. You also raised the question about getting some type of minimal release schedule on the Croton Reservoirs, and also on the Askokan, right?

MR. KARATH: Right.

MR. HENNIGAN: If this were done again, it would represent a demand on those supplies to meet those release schedules?

MR. KARATH: Yes.

CHAIRMAN CONWAY: Could I ask in connection with your point, Bob, have you quantified those releases?

MR. KARATH: In some cases, they have been quantified from the Fish and Wildlife standpoint. Right at the present time, there is a great deal of interest on the part of local people in additional releases in the Neversink River, also on the East Branch below the Pepacton West Branch below Cannonsville. The Commissioner of our Department did meet with New York City officials several weeks ago to discuss this problem. They didn't come to any conclusion, but I think they have started to talk about it. The Department has made some estimates of what they think the releases should be from the standpoint of Fish and Wildlife.

I think there are some other factors that need to be considered, too. There may be a need for additional release for water quality management. Then there is a kind of a nebulous release requirement for what you might call aesthic purposes, just to improve the appearance of the stream. Also there is a fourth factor that comes into play, and that is releases for ice control. Under the present schedule do critical ice conditions affect the fisheries. There are a number of factors that enter into the determination of what the releases should be.

CHAIRMAN CONWAY: Can they be quantified? I think the Commission should have those figures available.

MR. KARATH: I think they can be made available to the extent that we have them. On the Neversink the present minimum releases vary from about 5 to 15 cubic feet per second (cfs). I think the Division of Fish and Wildlife feels it should be three or four times that, fifty or sixty cfs.

CHAIRMAN CONWAY: How would that translate into million gallons a day?

MR. HENNIGAN: About 6.46 million gallons a day per 10 cfs, so these increased releases would be an additional 30 mgd.

CHAIRMAN CONWAY: We will have to explore this further, because this would be a very important element to consider. Would this be just for the Delaware reservoirs?

MR. KARATH: Now, just how solid these estimates are, I don't know. I think they are estimates and there are a lot of judgments involved. Also, these releases are being considered for below the Schoharie, Ashokan, and Croton reservoirs?

CHAIRMAN CONWAY: This is on the same issue, Bob, before you go on with your questions. We were in Orange County yesterday, and before I went there I was informed by various people that I would hear all about the Neversink issue. The question was never raised. What is the Neversink issue?

MR. KARATH: Well, it is the issue we have talking about, the release pattern below the dam.

CHAIRMAN CONWAY: Did the Neversink River become polluted?

MR. KARATH: Well, it is polluted in the minds of the local people. There are no fish in there, and in their judgment, they would like to see it restored.

CHAIRMAN CONWAY: This would require thirty million gallons a day additional releases?

MR. KARATH: Right.

MR. FORSTER: It was one of the finest trout streams in the East. But local pollutants caused the formation of a blue-green algae. The water releases were so small that the quality wasn't improved by flushing. But I don't know if this thirty million gallons a day is a necessary flow all during the year. I think it can be cleaned out once, and then some reasonable alternative can be reached and the fishermen would be satisfied.

MR. KARATH: Well, I am giving you, let's call it a ballpark estimate. Let's not get hung up on specific figures too much at this time. What I was trying to indicate was that the thinking of some of our Fish and Wildlife people is that the flows ought to be in that range for the fisheries.

MR. HENNIGAN: I want to repeat something you already said. In addition to the establishment of some type of minimum release schedule for the downstream streams beneath the dam, you also raised the question of, perhaps there should be some adjustment of the present operational release program of the City, to have better downstream conditions. Is that a fair statement?

MR. KARATH: Well, the other factor, in addition to the conservation releases would be the releases that are made to satisfy the Supreme Court decree. At the present time the City operates to make most of those releases from Cannonsville, so you have an inbalance between the three streams. That is another sore point with local people.

MR. HENNIGAN: You also made another point on the interrelationship of the water supply and water quality issues, particularly as exemplified by the Long Island situation. We also have the problem of the urbanization of some of these upstream watersheds that are now used, such as the quality problems in the Croton Reservoir. The issue of multiple use has been raised, and in many of the meetings we have had, there has been some discussion on the more intensive use of the existing City water supply reservoirs for recreational purposes. The other water quality issue we face is the fact that if we want to draw Hudson River water, what is the quality of that water and what has to be done to maintain it in a reasonable condition.

In other words, the only point I am making here is that I think your concern is probably greater than just Long Island, although Long Island is very crtical at this point.

MR. KARATH: At this time, it is becoming just as critical in some upstate areas as in Long Island.

MR. HENNIGAN: I think everybody agrees with your's and Jim Harding's admonitions for early action. I think you were being conservative when you said five to ten years. Most of the lead times for these things are more likely to be twenty or thirty years.

And then your other admonition to us was to make full use of the reconnaissance study, the V-A studies and the NEWS study. We are doing that.

Except some of the things in some of the studies were dismissed, perhaps justifiably, but rather out of hand with limited backup information. It seems to me that we have to back up the conclusions with more information to have it stick. Desalinization, reclamation, and weather modification are specific considerations. Also the following issues were raised at the height of the Gooley controversy--universal metering, conservation of water use, education, the whole spectrum of water development and use.

MR. KARATH: There are a whole host of alternatives that have been proposed instead of Gooley.

MR. FORSTER: Mr. Chairman, would it be reasonable to ask hese questions to give us department recommendations for stream flows which are in question in the Neversink?

CHAIRMAN CONWAY: I think we would have to have that.

MR. FORSTER: If we could have it for the record. Would that be reasonable?

MR. KARATH: I have that information, if you would like to have it.

CHAIRMAN CONWAY: I think it is critical that it be made available to the Commission, because we are talking about thirty million on the Neversink alone. I don't know what the others involve, but they are a significant percentage.

MR. KARATH: This information was developed for the meeting that the Commissioner had with the New York City representatives earlier this month. I think a copy of the short report prepared which includes the figures and undesirable releases from a fish and wildlife standpoint, can be made available to you.

CHAIRMAN CONWAY: Within the next fifty years, we have to develop a half a billion gallons as a ballpark figure, and redeveloping Hinckley, for example, would produce just about that. But if we really need seven hundred, two hundred for releases to provide proper stream control, it is going to be very important for our report. So I think that is critical.

MR. MERKENS: Are the conservation release requirements, as required by New York State, and the Montague Formula, as required by the Supreme Court, independent, or does the meeting of one contribute to the satisfaction of the other? What I am questioning is, if there was a different operation in Cannonsville, reducing releases from Cannonsville and perhaps letting more out of Neversink, wouldn't it be possible to meet a great conservation requirement with the idea of continuing to meet the Montague Formula?

MR. KARATH: That is a possibility, certainly there is no differentiation in the flow whether they are releases for conservation or releases to satisfy the Montaque Formula.

MR. MERKENS: So it does not necessarily follow that an increased conservation requirement would require an increased demand from the system, it would just be a shifting of the demand from one point to another?

MR. KARATH: There would be some of that. I think there would still be an increase in requirements. I don't think you could satisfy, let's say, the Fish and Wildlife needs by redistribution of releases for the Supreme Court requirement. There would have to be additional releases. They might not be as great as what we are talking about.

MR. MERKENS: To your knowledge, do all these reservoirs have the outlet capabilities for an increased downstream release requirement?

MR. KARATH: Well, the reservoirs in the Delaware system do. The one in the Schoharie I don't believe does. I am not sure that the Croton-Cornell Dam does either.

MR. MERKENS: Let me rephrase my question. Would it be possible to meet the increased requirements for the Neversink River, merely by shifting downsteam releases from Cannonsville?

MR. KARATH: Part of the time, yes.

MR. MERKENS: Do you think even just looking at the Delaware separately now, that it would still require an additional release?

MR. KARATH: I believe it would. I think you have to analyze your systems, and the releases, before you could give a good answer.

MR. MERKENS: You are now in the process of an adjudication on water rates. Is there anybody that has named the issue of the per capita restrictions that New York City has imposed on its clients? I know that this is a real sore point.

MR. VOPELAK: They would like to, but I rather doubt if we would let them in this particular case.

MR. MERKENS: What about the fact that New York City is required to sell water to municipalites and municipal districts but not county districts? That is, the

counties feel they should have a right as county districts to withdraw water, whereas New York City insists that they can only sell water to municipalities and municipal districts but not county districts.

MR. VOPELAK: A county district is a municipality, as far as I can understand. I don't know that anybody has ever forced the issue. The county district is a municipality under the law.

CHAIRMAN CONWAY: Well, a number of people in Westchester and other places feel very strongly about what you are saying, but New York City is taking the opposite position.

MR. MERKENS: This hasn't come to your attention?

MR. HARDING: I don't think that is a fair question to ask Mr. Vopelak, but as long as it has been brought up, I would like Mr. Hennigan to explore the possibility of getting a ruling from the Attorney General. It seems to me that, as a Commission, we could ask for such an opinion.

CONCLUSION

CHAIRMAN CONWAY: We would certainly like to express the deepest appreciation of the Commission for your appearance today; not only for your Department, but personally; it has been most illuminating and most helpful. I realize, as Bob Hennigan pointed out, you have been helping us out a lot, long before this, in your relations with our staff, and we appreciate it and hope that we can count on your continued help.

Thank you very much. This meeting is now adjourned.

APPENDIX A

ATTENDANCE

SOUTHEAST WATER SUPPLY COMMISSION

Commissioners
E. Virgil Conway, Chairman
Neil H. Anderson
Herman Forster
James C. Harding
William J. Schickler

Staff
Robert D. Hennigan, Executive Director
David E. Buerle, Director, Management Studies and Analysis
Paul W. Merkens, Director, Engineering Studies and Analysis
Stephen C. Lackey, Assistant Director, Engineering Studies and Analysis
Irene W. Baker, Public Relations
David A. Duffy, Administrative Assistant
Leslie W. Van Derzee, Research Associate

DEPARTMENT OF ENVIRONMENTAL CONSERVATION

Edward Karath, Regional Engineer, Water Management Planning Unit
Edwin Vopelak, Director, Bureau of Water Regulation

Observers
Samuel Gofseyeff, New York Board of Water Supply
William Borghard, Commissioner, Department of Environmental Facilities

APPENDIX B

OUTLINE

I. Introduction–DEC Authority
II. DEC Interest in Water Supply Needs of Southeastern New York
  A. Examples of Water Supply Concerns
  B. Water Resources Planning
    1. Regional Water Resources Planning Boards
    2. V-A Studies
    3. Comprehensive Sewerage Studies
    4. Reconnaissance Studies
    5. North Atlantic Regional Water Resources Study
    6. Northeastern United States Water Supply (NEWS) Study
    7. Delaware River Basis Commission
    8. Desalting Studies
  C. Public Water Supply Regulation
    1. Public Water Supply
    2. Approval of Large Wells in Long Island Counties
    3. Registration of Well Drillers on Long Island
  D. Pure Waters Program
III. DEC Statutory Authority
  A. Water Resources Law
  B. Article 12 of the Public Health Law
  C. Pure Waters Bond Act
IV. Ongoing DEC Activity Directly Related to Mission of Commission
  A. Water Resources Planning
  B. Public-Water Supply Regulation
  C. Pure Waters Program
V. Available Reports and Data
VI. Suggestions and Recommendations

APPENDIX C

DECLARATION OF POLICY, ENVIRONMENTAL CONSERVATION LAW

"Declaration of policy: The quality of our environment is fundamental to our concern for the quality of life. It is hereby declared to be the policy of the state of New York to conserve, improve and protect its natural resources and environment and control water, land and air pollution, in order to enhance the health, safety and welfare of the people of the state and their overall economic and social well being.

It shall further be the policy of the state to improve and coordinate the environmental plans, functions, powers and programs of the state, in cooperation with the federal government, regions, local governments, other public and private organizations and the concerned individual, and to develop and manage the basic resources of water, land and air to the end that the state may fulfill its responsibility as trustee of the environment for the present and future generations.

It shall further be the policy of the state to foster, promote, create and maintain conditions under which man and nature can thrive in harmony with each other, and achieve social, economic and technological progress for present and future generations by:

a. assuring surroundings which are healthful and aesthetically pleasing,
b. guaranteeing that the widest range of beneficial uses of the environment is attained without risk to health or safety, unnecessary degradation or other undesirable or unintended consequences,
c. promoting patterns of development and technology which minimize adverse impact on the environment,
d. preserving the unique qualities of special resources such as the Adirondack and Catskill forest preserves,
e. providing that care is taken for the air, water and other resources that are shared with the other states of the United States and with Canada in the manner of a good neighbor.

APPENDIX D

POWERS, DUTIES AND FUNCTIONS
DEPARTMENT OF ENVIRONMENTAL CONSERVATION

1. Coordinate and develop policies, planning and programs related to the environment of the state and regions thereof.

2. Promote and coordinate management of water, land and air resources to assure their protection, enhancement, provision, allocation, and balanced utilization consistent with the environmental policy of the state.

3. Provide for the propagation, protection, and management of fish and other aquatic life and wildlife and the preservation of endangered species.

4. Provide for the care, custody, and control of the forest preserve.

5. Provide for the protection and management of marine and coastal resources and of wetlands, estuaries and shorelines.

6. Foster and promote sound practices for the use of agricultural land, river valleys, open land, and other areas of unique value.

7. Encourage industrial, commercial, residential and community development which provides the best usage of land areas, maximizes environmental benefits and minimizes the effects of less desirable environmental conditions.

8. Assure the preservation and enhancement of natural beauty and man-made scenic qualities.

9. Provide for prevention and abatement of all water, land and air pollution including but not limited to that related to particulates, gases, dust, vapors, noise, radiation, odor, nutrients and heated liquids.

10. Promote control of pests and regulate the use, storage and disposal of pesticides and other chemicals which may be harmful to man, animals, plant life, or natural resources.

11. Promote control of weeds and aquatic growth, develop methods of prevention and eradication, and regulate herbicides.

12. Provide and recommend methods for disposal of solid wastes, including domestic and industrial refuse, junk cars, litter and debris consistent with sound health, scenic, environmental quality, and land use practices.

13. Prevent pollution through the regulation of the storage, handling and transport of solids, liquids and gases which may cause or contribute to pollution.

14. Promote restoration and reclamation of degraded or despoiled areas and natural resources.

15. Encourage recycling and reuse of products to conserve resources and reduce waste products.

16. Administer properties having unique natural beauty, wilderness character, or geological, ecological or historical significance dedicated by law to the state nature and historical preserve.

17. Formulate guides for measuring presently unquantified environmental values and relationships so they may be given appropriate consideration along with social, economic, and technical considerations in decisionmaking.

18. Encourage and undertake scientific investigation and research on the ecological process, pollution prevention and abatement, recycling and reuse of resources, and other areas essential to understanding and achievement of the environmental policy.

19. Assess new and changing technology and development patterns to identify long-range implications for the environment and encourage alternatives which minimize adverse impact.

20. Monitor the environment to afford more effective and efficient control practices, to identify changes and conditions in ecological systems and to warn of emergency conditions.

21. Encourage activities consistent with the purposes of this chapter by advising and assisting local governments, institutions, industries, and individuals.

22. Undertake an extensive public information and education program to inform and involve other public and private organizations and groups and the general public in the commitment to the principles and practices of environmental conservation and develop programs for the teaching by others of such principles and practices.

23. Cooperate with the executive, legislative and planning authorities of the United States, neighboring states and their municipalities and the Dominion of Canada in furtherance of the policy of this state as set forth in section ten of article two of this chapter.

24. Exercise and perform such other functions, powers and duties as shall have been or may be from time to time conveyed or imposed by law, including, but not limiting to, all the functions, powers and duties assigned and transferred to the department from the department of health, conservation department, department of agriculture and markets, and office for local government in the executive department by a chapter or chapters of the laws of nineteen hundred seventy.

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ENVIRONMENTAL FACILITIES CORPORATION

OCTOBER 14, 1971
Albany, New York

ENVIRONMENTAL FACILITIES CORPORATION

CONFERENCE

OPENING REMARKS

CHAIRMAN CONWAY: This is the first of a series of meetings with various state agencies and divisions of state governments that are interested and involved with the water problems of Southeastern New York. Bob and I have met on an informal basis and in some cases just Bob with various state agencies in a preliminary way. We felt that for the input into the Commission's work it was vitally important that the Commission itself meet with each of the various state agencies involved. We are delighted to have Arthur Handley, Vice President, Environmental Facilities Corporation, with us. He has agreed to represent the Corporation and will discuss with the Commission their role in relation to the study of the Commission.

MR. HENNIGAN: Could I interrupt for a minute before we get started. I sent a letter to the state agencies and I think it would be a good idea if I read it into the record. This is the text:

> "In preparing for the presentation to the Commission I would suggest that the following items be covered: (1) Interest of the Agency in the water supply needs of Southeastern New York. (2) Statutory authority of the Agency, that is, regulation, operation, etc. (3) On-going activity of the Agency directly related to the mission of the Commission. (4) Reports, data, or other information available to the Commission to carry out its work and suggestions or recommendations of the Agency relating to the Study of the Commission findings or recommendations of the Commission." (We end up by saying that an official record will be made; participants will be given an opportunity to review the draft record and may make comments, additions, deletions, or extension prior to final copy. Any manuscripts used can be part of the official record.)

PRESENTATION

MR. ARTHUR HANDLEY, Vice President – Environmental Facilities Corporation:

It's a pleasure to welcome the Commission here to the Environmental Facilities Corporation. We've had the privilege of letting Mr. Hennigan and his staff meet in this conference room on other occasions. The first thing that I would like to say is that we would like to come back to you as the Corporation has more time to reflect and to learn, for that matter, about your particular mission. I'd like to consider this a first approach, if we may, and work with you as you proceed with your studies and activities. The nature of your business is very closely akin to many of the problems that you face in making your ultimate recommendations about the water supply needs of southeastern New York. Since we are the first agency to meet with you as far as I know, I think it would be worthwhile if you looked over the environmental bureaucracy of New York State. Directly behind me is a chart of this organization and I have some extra copies which I will submit for the record (Appendix, Figure 1).

In New York State as of July, 1970, environmental responsibilities were assigned to the new Department of Environmental Conservation. At the same time, there was established a Council of Environmental Advisers. These are people who advise the Governor as to the direction that is being taken in the environment and trends, innovations, suggestions–things of that nature.

Prior to July, 1970 there was a State Water Resources Commission. This has now, for all practical purposes, become the State Environmental Board which is shown on the right. The Board establishes environmental standards, reviews programs, coordinates activities, and provides for information exchange. Now, the box at the extreme left of the chart is the Environmental Facilities Corporation. We were established by law in 1967 and were organized to start work in 1968. I think the important thing to remember is that the Commissioner of Environmental Conservation is directly tied to all of the working entities associated with the environment.

At the moment, we are the only State agency in the environmental field that has independent financing capability, and the authority to construct and operate environmental facilities for local government.

The special interest this morning is water supply. Our capabilities were expanded in July, 1970, at which time we were permitted to contract with municipalities and State agencies for public water supply financing advisory services, design management, and construction. In this particular area (water supply) the Corporation cannot own facilites, and cannot construct reservoirs. When the water supply legislation was introduced, it was very broad. We were given the same capabilities as we have in wastewater treatment, sewer

and storm water construction, and solid waste. But when the legislation was considered, there was great concern with Gooley No. 1 and other large reservoirs proposed. Consequently, at the last minute, we were restricted from owning water supply facilities, and in fact, were prevented from constructing "reservoirs." Insofar as our financing capability goes, we can finance any water supply facility. We are doing this now. We can construct, on a turn-key basis, water supply facilities. In summary, then, we can design and construct ground and surface water sources, water treatment plants, transmission and distribution systems, underground and elevated storage facilities, and pumping stations.

I would like to provide you with some perspective on the public water supply situation in New York State as I see it today. Some 91% of the State population is served by public water supply. Without considering New York City—in upstate New York even—84% of the population is served by water supply. There are eleven hundred water supply sources and 600 independent districts which purchase water from others. About 23% of these upstate water supplies are privately owned. It's very important for us to know that these facilities and supplies have a median age of 60 years, and 75% of them have significant deficiencies which require construction. If we look at some of the recent expenditures for water supply improvement—activity which was brought before the Water Resources Commission, and successor agencies—we find that in 1968 they reviewed 40 million dollars worth of applications in '69, 40 million; and in '70, 20 million, and I do not yet have the figure for 1971. Now in 1965, the State Health Department determined that there were 339 water supplies that needed significant improvement, and they estimated that the cost of the improvements needed was $235 million. They also clearly delineated 361 municipalites in New York State with population densities which would require public water supply and which did not have such facilities. The estimated cost of providing water for these populated areas was $160 million. Remember that this estimate by the State Health Department was made in 1965.

So, if we consider then in '65 the State Health Department felt that there was a total of 395 million dollars worth of water needs in upstate New York, and if we, with the perspective of time, say that we should double this, we face the immediate need—a desperate need, for that matter—of $800 million in water supply improvements. Reviewing the massive documentation for New York City, it is not out of balance to say that perhaps $500 million could be spent to serve its needs. We come up, then, with a total water facilities need estimate of 1.3 billion dollars.

What is surprising to me is the way that the environmental picture has developed. The people of New York State aren't aware of the water supply needs particularly, and I think it is time to put emphasis on the very basic environmental need of public water supply. So we have a one plus billion dollar program which until you people came along, was for all practical purposes overlooked.

Now if I could go back to the charts here, there is one other important factor that you should know. That is that the responsibility for public water supply management and the public water supply regulation remains with the State Health Department. So if one is looking for that agency which has a basic regulatory design and review responsibility, this has remained with the State Health Department. It was thought that public water supply continued to have a prime tie with public health and therefore that it should continue in that area. So it will be important for the Commission to hear from the Health Department and to get their updated evaluation of water supply needs, particularly in the region that you're interested in.

Now, to give you some perspective on our particular organization I mentioned the financing capability. This has been tested and proven its value with 60 or 70 municipalities about the State. Our bond rating is equivalent to that of New York City's. It doesn't match Mr. Harding's Westchester County, or Nassau County, or some of the other urban counties. But it is superior to most rural counties, and most cities, villages, and towns. Last fall, when municipalities just could not get money, we were able to secure loans for them. And generally we've been able to do this at an interest rate of anywhere from one half to one percent lower than a municipality could achieve on the open market. So we do have this independent financing capability, and have about $200 million in financing for various municipalities throughout the State.

In addition to this financing capability, we can own and operate wastewater treatment plants. I mentioned earlier we can build and turn back water supply facilities. So, at the moment, we have four wastewater treatment plants in operation. We have 17 more which are either under design or construction. We have the ability to provide turn-key services, and have under design and contruction 18 wastewater treatment facilities and one water supply. so that we have a work-load of 19 turn-key operations.

We are now operating a solid waste disposal facility for the City of Rochester. They provide us with about 1,000 tons of solid waste a day, and we land fill this in the Town of Rush, Monroe County. One of the first things to worry about was how does one handle 1,000 tons of waste a day. We had never done it before and we're doing it at the moment with two D-8's, a front end loader, a scraper, and a steel wheel compactor and a staff of about eight people. So it can be done. We are also operating a disposal facility of equal size down in the Town of Brookhaven. It has a population of about—well 300,000—equal scale.

Another interesting area, and I'll go through this rapidly, has been our advisory service studies for the municipalities. We've done 29 contracts with a dollar volume of about $225,000. We have 13 other contracts with municipalities in such places as New Fane in the west and Putnam County in the eastern portion of the state. We have submitted twenty-six proposals to other muncipalities, and I mentioned earlier that we had provided financing to a host of different muncipalities.

Now I would hope that with this discussion you would have some idea or feel for our particular agency. We do anticipate a greater coordination between the policies of our corporation and that of the Department of Environmental Conservation.

Several years ago I had some opportunity to be involved in the contract negotiations for the $860,000 water resource evaluation that the Water Resources Commission had spark plugged, and yesterday, and the day before, in looking over the stack of material one gets automatically on water supply, particularly that of the Hudson Valley and New York City, I came across this summary report which I'm sure you've all seen of the study. I was reviewing background information so that I could sound half-way intelligent today about New York City's problems, and I found the sentence on page 33, and it said, "the greatest water supply in the region"—we're talking about the eastern region—"is in the New York City Metropolitan Area." And I thought, my heavens, all of that work and this is all I can find on New York City.

Now as you well know, I guess it was the Health Department, Jim, that did another comprehensive water supply study for New York City and Westchester County. This study I am sure from a technical standpoint is accurate and complete. But I must say that I was a bit disappointed in that study from the standpoint that the Health Department had attempted to impress the study engineers with the need to consider economics, financing, and of course, the administrative structure which would be needed to do something about the water supply problems of Westchester and New York City. I don't have that summary report with me. It's in the stack next door, but as I recall in the summary there is a single statement that we should immediately refer the project to appropriate officials in the New York City Water Resources Commission and Westchester County or to a temporary commission for implementation. I had hoped—and the Health Department had hoped in August of '67—that there would be something more specific you know regarding just how one might proceed to determine the type of administrative vehicle necessary to achieve the needs of New York City and the other metropolitan area counties. But when you engage a group of engineers, you find that frequently there is little interest on their part to consider those important administrative and governmental aspects of a project of this nature. So for my money, then, in addition to the technical information that we've got from this report which is indeed important, with the knowledge of pace of state and local government we at last have your commission to tackle this situation. If I were to comment on your charter or on your responsibilities, it certainly seems to me that while you have a wealth of technical information to review, the most important aspect of your job requirement is to let people know that there is public water supply need that is equally important as some other environmental vagaries that are popular today. We should begin to direct the public's attention to public water supply and public water supply need. Now if you do nothing else

than this, you will have accomplished a fantastic piece of work, I guarantee. The second thing, of course, is to organize an administrative entity or make recommendations for such an entity which would have the flexibility and the fiscal capability to tackle this New York City water supply problem and that of the metropolitan areas that surround this.

The City has been in the water supply business—for what is it—125 years or more. In my experience in the olden days in Dutchess County and Putnam County and in Albany, the City has generally had a rather cavalier attitude about how it treated entities such as Westchester. Westchester County, I think, has survived many of the problems simply because Mr. Harding was able to talk to fellow colleagues in New York City, and perhaps even cajole them on occasion to get the situations improved. This has not been the case of other counties, I know. It seems that there is a need for a change. We have assembled some information which I can pass on to the Commission after some editing on the New York situation itself—the internal workings of public water supply by New York City.

There is a need within the City structure to treat public water supply as a self-sustaining municipal utility. At the present time I find that when the water revenue is received in New York City that approximately 65 million dollars a year are funneled off for other municipal problems. If we can switch this thing around to a public utility, you can quite adequately cover the current operating costs of New York City water supply and you can handle the debt service, and you can reduce the real property tax rate. There is a strong case to operate the New York City water as a utility, which opens the door for an understanding of how perhaps some regional utility could be operated.

It is a bit disappointing to find that New York City is one of the few large cities in the United States that does not operate water supply as a public utility. I show you as an example an annual report of the Detroit Metropolitan Board of Water Commissioners. The Detroit Metropolitan Water Services is a non-profit department of the City of Detroit with two regional water services to southeastern Michigan. Each system is financially self-supporting, using revenues rather than real property taxes. Each system has experienced record growth and southeastern Michigan's demand for fresh water and cleaner lakes and rivers has increased. Very important—each system is operating under a comprehensive regional development plan which provides for an orderly growth of water services in step with need. These are positive statements that ring clear to me, and I am sure that they will to you when you look over the hodgepodge that you faced with the current New York City operation. It is thrilling to me to read that this Detroit system delivered 217.1 billion gallons of filtered water to 3½ million people and industries in 67 southeastern Michigan communities. Operating as a public utility, it was possible to set aside 10.8 million dollars for future system improvements and replacements. I bring this to your attention because I

think it is an example of the fact that inter-municipal water supply for significant groups of local government, large numbers of people, indeed millions of people, is possible. This is the scale that they face here in New York and it looks good.

I think with that brief description of who we are and what our general capabilities are, and with a plea to you first, that I would hope that your Commission will do something about bringing public water supply needs to the attention of the people of the region and to New York State, and secondly, with this strong personal feeling that the main thrust of your study should be the development of an administrative entity, that I will stop there, Mr. Chairman, and see whether you or others have questions.

DISCUSSION

CHAIRMAN CONWAY: Thank you very much for a very informative presentation. Does the Environmental Facilities Corporation build facilities for local entities on their request?

MR. HANDLEY: All of our activities are accomplished by means of a contract which is negotiated with the muncipality or group of municipalities.

CHAIRMAN CONWAY: But in addition to financing you also operate these facilities?

MR. HANDLEY: We can do either or we can go in and provide turn-key services in which we manage, design, and construct and then turn it back to the municipality for operation. In wastewater treatment we can own the facilities outright; in connection with water supply we cannot own facilities.

CHAIRMAN CONWAY: The $800 million that you calculated that we need in water supply improvements is not to simply improve existing facilties; doesn't it take into account increases in water supply needs?

MR. HANDLEY: It includes cost for some 300 areas in the State that we feel now need public water supply facilities. So it would not only pick up a backlog, but it would also provide some new facilities.

CHAIRMAN CONWAY: Sufficient for the future, I mean?

MR. HANDLEY: Yes, the design period of water supply usually is for 50 years.

CHAIRMAN CONWAY: When you say that New York City does not operate its water supply as a public utility and then point out that Detroit does a credible job, you are principally talking about the fact that they don't charge for their water based on cost.

MR. HANDLEY: This is one of the details. The main problem is that they have such a diverse and intricate method of financing. It's a rather startling fact that another two million dollars received in rate restructure would make the system a self-sustaining utility.

CHAIRMAN CONWAY: Only two million?

MR. HANDLEY: Yes, right.This involves a total figure of about $155 million a year for operation, payment of debt service, and also provides for a deficiency fund to take care of minor improvements as they come along.

CHAIRMAN CONWAY: Is that two million in addition to—I think you mentioned 65 million was diverted. Is this the latest information?

MR. HANDLEY: The figures that I have are for '69 and with the combined real estate tax take and the water revenue, they were diverting 65 million dollars a year to other municipal requirements because water revenue and the real estate taxes go into a general fund in New York City. You are perhaps more familiar with this than I am.

MR. HENNIGAN: The impression I get is that the 65 million are monies over and above current operating costs and debt service. Is that correct?

MR. HANDLEY: Yes, right.

MR. HARDING: Haven't they tripled their rates since Mayor Lindsay came in?

MR. HANDLEY: Let's see. They doubled them I thought, in '69 and then you mentioned a further increase here.

MR. HARDING: The original theory, I think, was that the water rates would pay for operating costs, and capital costs would be paid for out of real estate tax.

MR. HANDLEY: That's correct.

MR. HENNIGAN: Now they have changed it around and they are diverting money for water revenues into the general fund to reduce real estate taxes.

MR. HANDLEY: Actually, if you operated the water system as a water utility what you would do is lower the real estate tax by a figure of 77 million a year, and realize a reduction in that area. You would increase slightly the water rate picture and with this tripling that you mentioned they may have achieved this already.

MR. HARDING: Well, they are charging 700 dollars a million, I think, for water, which is probably the highest of any major city in the United States outside of possibly the West Coast. I don't see—if you operated strictly as a water utility and don't get the benefit of real estate taxes, nor do you give money to relieve real estate taxes—where you would save the real estate taxes any.

MR. HANDLEY: What you do is achieve a more direct routing; for instance, in '69 they supported the water activity to the tune of $77 million; they funneled off from that $65 million. So there is some saving there, and my point is that if we can point out to people when they pay their bill that they are paying X dollars for water, they know what they are paying for and they will pay it.

MR. HENNIGAN: There is a point here and that is the fact that original borrowing for water works is not subject to any constitutional debt limitation, which has made this a very practical or a very attractive way to do business in New York. I sometimes get the feeling that borrowings not subject to the constitutional debt limit are considered free money. I think it's an element that drives the City toward capital construction as a solution to this problem, rather than coming up with a high operating cost, low capital cost facility which would be subject at least to the real estate tax limitation.

MR. HANDLEY: The public works being constructed by the City have increased fantastically. I think the City budget has doubled or tripled within the past 15 years, and the City budget equals that of the State of California for instance. I would question just

how long they can proceed in this manner. And I would suggest that perhaps unloading this water supply situation on another entity would be something that would be seriously considered and for that matter might be acceptable to the City.

CHAIRMAN CONWAY: Do you think it would be feasible to do this on a metropolitan-wide basis?

MR. HANDLEY: I think it should be because feasibility is a function of the type of entity that you people might come up with. There are many, many not just technical, but fiscal and legal things that have to be worked out.

MR. HARDING: Art, I'll put a practical question to you. It's at least a finite question. Suppose this Commission should recommend that a new supply be developed? Well, several places have been mentioned—Gooley, which I don't think has a chance in the world of ever getting built. Hinckley, which looks logical to me, or Hoosick, which is in the last NEWS study. Suppose the Commission should say New York needs water and that's where they ought to do it. Do I understand that your Corporation, if this Commission recommended that a source be developed, and if we said that your agency is the logical one to build it, that you would build it but you couldn't operate it?

MR. HANDLEY: Yes, that's correct.

MR. HENNIGAN: Now, suppose one of the reservoirs was built in the Adirondack Park—the Constitution says that the State has to build it.

MR. HANDLEY: No independent or municipal water district or the City of New York or any other agency could build it except an agency of the State of New York.

MR. HENNIGAN: Do you think that you are an agency of the State of New York in that respect, and that you could build something in the Adirondack Forest Preserve?

MR. HANDLEY: Yes, sir.

MR. HENNIGAN: So, in other words, if you are designated as an agent, you could build a turn-key operation and turn it over to some other agency that might be created to operate it.

MR. HANDLEY: That's correct. Or with changes in our law we could become the operating agency and actually own the facility. This is something that needs serious study.

MR. HARDING: How would you sell one half billion dollars worth of bonds without owning something? Don't you have to have an equity in back of the bond?

MR. HANDLEY: Yes, I would assume that in the process the entity who would be involved in this would not only embark on the properly scheduled water supply improvement, but would also assume the ownership of the existing upstate facilities so that you would actually go right into the water wholesaling business. The question, Jim, further is whether we would consider an agency such as ours which has total New York State geographical responsibility, or whether it would be more appropriate to create a new agency with the specific responsibility. One of the problems you know that we faced is that when we started in business we had no physical plant; we had to develop business.

CHAIRMAN CONWAY: On the type of development that may be needed you'd run into financing and technical problems if you expanded–Hinckley, for example.

MR. HANDLEY: That's true. I would say, however, that you would know what the cost of the expanded Hinckley was. The furor that was generated in connection with Gooley Number One on reflection certainly was out of perspective, and we are a little fouled up on the environmental priority list as far as I am concerned. I think this is the message that has to get out to the public which needs water. It takes courage to do this.

MR. QUARTARARO: Art, it seems to me that primarily you're in the service business.

MR. HANDLEY: Yes, service business–the nuts and bolts of the service business. We're associated with construction and operation. We call this implementation. Many of the other State agencies consider that they are implementers, and you know they really are not. Environmental facilities in New York State are constructed by municipalities, not by the State of New York. With the exception of our agency, the State of New York has not yet put its foot out nor extended itself towards the construction of state-owned environmental facilities. It is now time to consider whether this should be done.

MR. HENNIGAN: On your water supply capabilities you now are prohibited from the construction of any reservoir, is that right? It isn't particularly restricted to the Adirondack Park, it's any reservoir?

MR. HANDLEY: Well, the thrust of the legislation is such that we cannot build a reservoir. I think that if you get the attorneys to look into this that we can construct impoundments for small supplies. But, not in the scale that you people are interested in.

MR. HENNIGAN: I presume this was brought about because of the fear that you might build a reservoir in the Adirondacks. Also you cannot own any water supply facilities?

MR. HANDLEY: That's correct. I would guess that it was the desire of the Legislature to let it be known that we would not be an entity which would embark on vast public water supply improvements.

MR. HENNIGAN: As far as the corporation is concerned, in terms of in-house capability, is your function one of mainly brokering these projects?

MR. HANDLEY: I prefer the word "management." Essentially we contract for engineering services. We do have a lot of legal talent, we have in-house financial talent, but not engineering talent other than people we feel are necessary to manage the project. Of course, when we actually go in and build and operate a project, then we staff for that project. Our Brookhaven solid waste staff is about thirty people. Monroe County is about twenty.

MR. HENNIGAN: Are each of these projects self-supporting in terms of staff needed to operate them?

MR. HANDLEY: Yes.

MR. HENNIGAN: The construction of water facilites is probably your least active area?

MR. HANDLEY: That's correct. It's the newest also.

MR. REDMOND: Is there any upper limit to the amount that you can finance?

MR. HANDLEY: No, there's not. We're not restricted by the legislation in that connection.

MR. QUARTARARO: The cost of building these treatment facilities are borne by the municipalities, right?

MR. HANDLEY: Correct. And the operation is assumed by the municipality.

CHAIRMAN CONWAY: So the bond issue becomes a revenue-type bond?

MR. HANDLEY: Yes, it is a revenue-type bond. From my experience, any entity that you people might consider or recommend I would hope that you expect the State to subsidize in some way at least in the early days of operation. This has been the case where other special groups, i.e., UDC, Dormitory Authority, State University Construction Fund, etc. We are the single agency that did not receive an outright subsidy to help organize and get into business. This has been very difficult for us. We work on first instance monies and are able to meet our repayment agreements, but it puts terrific pressure on the agency in getting off the ground. Something beyond first instance money is indicated. This is not an unusual request. When we talked about our concept in the solid waste field and environmental facilities parks, I can remember making a pitch in the Governor's Office to the effect that the parks could be self-supporting entities, pay for themselves. Alton Marshall who is a crackerjack at State Government said to me: "You're crazy if you think you can do that; you need a State subsidy to start."

MR. QUARTARARO: The way they work it in Westchester County is if someone wants to expand a plant or build one they hire an engineer, and then they submit the plans to the Deparrment of Environmental Conservation for approval. Then they get a grant from the State and build it. How do you folks fit into this picture?

MR. HANDLEY: Well, actually we assume the management responsibility for the municipality.

MR. QUARTARARO: After it's constructed?

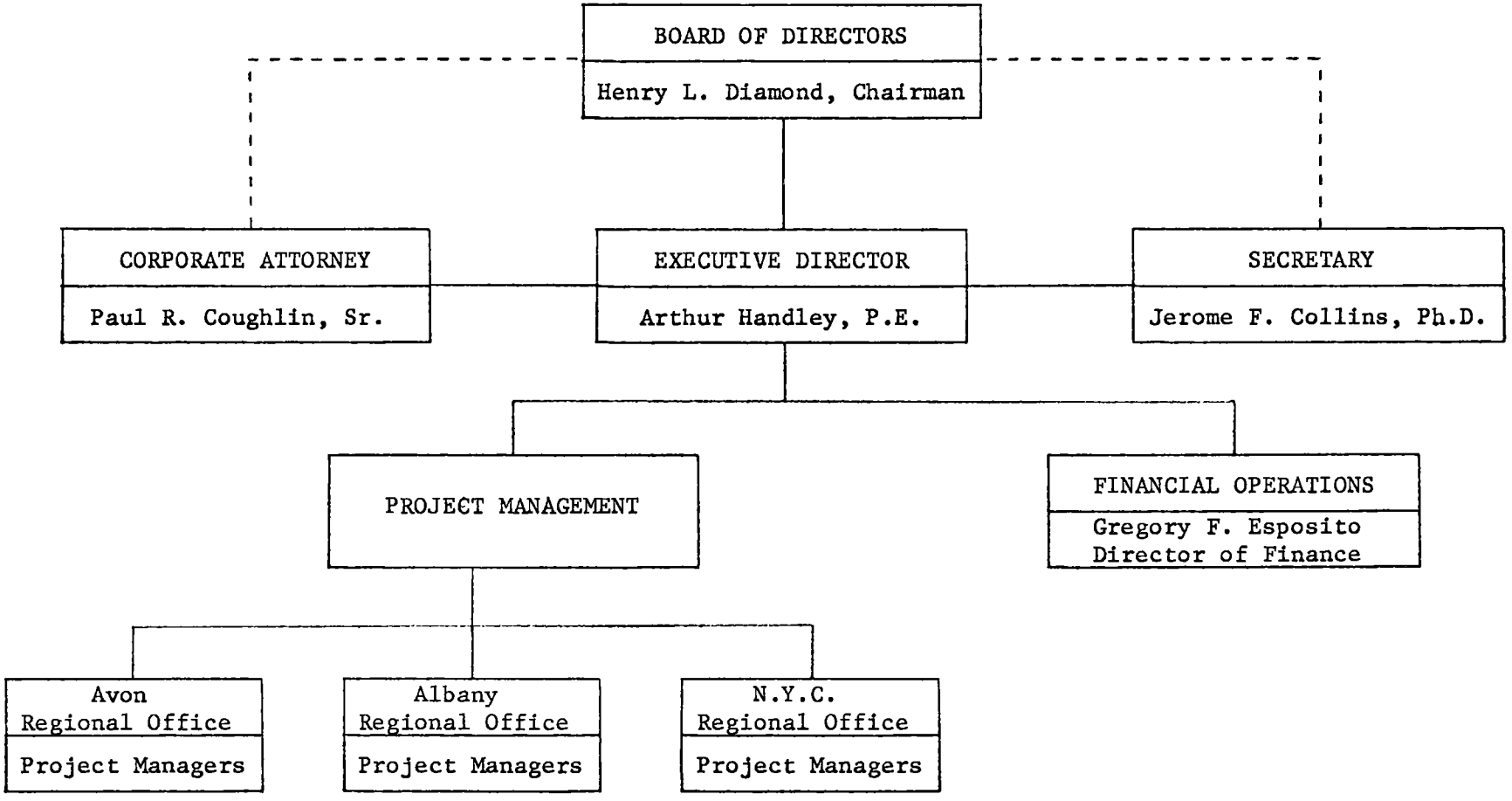
MR. HANDLEY: Oh, no. We can step it at the very beginning and contract with the municipality. Why, you may ask, would they want to contract with us, because we turn around and charge them a fee for service? Their reasons for contracting with us are many actually. First of all, generally you have a better financing deal if you come with us. Secondly, the type of environmental facility that is required in this day and age and its costs is all too frequently overwhelming for a municipality. If you're the mayor of a village or city or town and face this tremendous project, the first thing you do is get scared to death, and secondly, it's kind of logical to look to someone who has done this type of work. We all know that we can build a house--anyone of us can to this. In building that first house, no matter what our background, we will probably make mistakes. So it is logical to go to an outfit that has built thirty. Also, it is logical to have someone with assigned responsibility, so there are some political reasons as well as other practical engineering reasons. Since we do this so frequently we have had a good record in obtaining, for instance, FHA grants. We know how to fill out grant applications; we know the latest requirements of the Health Department, DEC, and so on. One develops an expertise and we provide it and are paid for our work.

CONCLUSION

CHAIRMAN CONWAY: I certainly thank you, Arthur, for a very wonderful presentation. It's a tremendous responsibility.

FIGURE 1 – APPENDIX A

NEW YORK STATE ENVIRONMENTAL FACILITIES CORPORATION



4/27/72

ATTENDANCE

SOUTHEAST WATER SUPPLY COMMISSION

Commissioners
E. Virgil Conway, Chairman
James C. Harding
William J. Schickler
William G. Borghard
Anthony M. Quartararo

Staff
Robert D. Hennigan, Executive Director
Robert W. Redmond, Attorney
Richard F. Estes, Director of Management Studies and Analysis
Paul W. Merkens, Director of Engineering Studies and Analysis
Harold Breon, Water Resources Engineer
David A. Duffy, Administrative Assistant
Evelyn Ruffinen, Secretary

ENVIRONMENTAL FACILITIES CORPORATION

Arthur Handley, Vice-President Project Development and Operation

DEPARTMENT OF HEALTH

OCTOBER 27, 1971
Albany, New York

DEPARTMENT OF HEALTH

CONFERENCE

OPENING REMARKS

CHAIRMAN CONWAY: This is one in a series of meetings the Commission is holding with various State and Federal agencies. We are delighted to have Mr. John Bumstead of the New York State Department of Health here. The Department of Health has a direct relationship to the quality of our water. This is an important aspect to our water supply, since it is both a quantitative and qualitative matter.

PRESENTATION

MR. JOHN BUMSTEAD, Director, Bureau of Water Supply, Department of Health:

The invitation to appear before you is appreciated. We are glad to have this opportunity particularly because we have a deep interest in the public water supplies in the State of New York, and particularly in getting improvements in the public water supply. Perhaps 85 per cent of the water supply facilities in the State of New York, need substantial physical improvements. This is quite a problem.

People in the water supply industry are quite concerned about the fact that public water supply is, and has been totally inundated in the publicity and the public relations effort of water pollution control. We feel that a safe, adequate, palatable public water supply is the number one public health objective for any community.

We are also aware of the terrific competitive drive for public funds, and this aggrevates a critical need for more and better public water supply.

We are vitally interested in your program and in the water supply needs and problems of southeastern New York State. The Comprehensive Public Water Supply Studies, which are directed to the utility concept of providing public water supply, have thrown considerable light on these problems.

I think that these studies have proven to be very beneficial by bringing the public water supply system and the needs and the problems into sharp public focus. We need more of this, particularly in competition with the water pollution control activities. This generation of local interest and concern, we hope, will provide some motivation for both long and short-term improvements in public water supplies.

The Department continues to press for the creation of either county water districts or part-county water districts. We have a multiplicity of small water systems throughout the State who do not have either adequate management, billing, maintenance, or laboratory control, and we feel that one of the best ways to resolve these and other problems is to apply an area-wide utility conceptual approach.

The Department's concern is basically with the quality of the drinking water delivered to the consuming public. In this connection, the Department on August 11, 1971, promulgated a new Rule and Regulation, Part 170, Sources of Public Water Supply. This was promulgated to protect present and potential sources of water supply, both ground and surface, and is tied into the existing stream classification system and pure waters program. It contains specific limitations in the following categories: physical, microbiological, inorganic chemicals, organic chemicals, pesticides, and radioactivity. I might add this applies to waters classified as AA, A (surface waters), and GA (groundwater).

We feel that this promulgation of Part 170 is a prudent public health administrative action because of the variety of wastes and exotics being discharged to the waters of New York. Conventional water treatment processes do not remove many of these exotics. New techology is being sought in various places, but for many contaminants is not yet available. Therefore, to protect public water supplies from containing contaminants, our only resource at this time is to prevent the discharges.

We appreciate the scope of the Commission's charge. Of necessity, State and local laws, debt structures, utility financing, available water resources and management of water utilities and other concerns fall within your scope. We have a vital interest in the resolution of basic institutional, financial and legal problems which underlie successful area-wide utility operation. We will contribute whatever we can from our files or from our personal knowledge to your information base. To date, we have given Mr. Hennigan all available comprehensive study reports and much other data on public water supply systems.

I do not know whether there is anything additional you want at this time or not, but we stand ready at this time to work completely with you.

We will do whatever we can, but we are up against manpower limitations which might impede the rapidity of our response. We have our whole Bureau, and have had them all summer, making complete inspections of public water systems. This has not been done in some cases for a number of years and is long overdue. It is an essential and high priority activity. Everybody in the Bureau is doing this all over the State. Presently, we are writing the reports.

Of prime interest at this time is that New York City is now included under the Sanitary Code by recent legislative action and we have new Part 170, to which I referred.

Under the Public Health Law "The New York State Department of Health shall supervise and regulate the sanitary aspects of water supply." Part 72 concerns drinking water standards and contains specific limitations as to concentrations of substances in drinking waters.

The Public Health Council, as set up under the Public Health Law, has the power to establish, amend, and repeal sanitary regulations known as the Sanitary Code. The Code may deal with matters affecting the security of life or health or preservation and improvement of public health, and it shall also prescribe the qualifications for public health personnel.

Part 5 of the Sanitary Code, Drinking Water Supplies, provides for approval of plans and completed work; reporting emergency changes in water systems; approval of fluoridation, disinfection, protection and supervision; new sources; physical connections, bottled and bulk water; treatment of public water supplies; and operation of public water systems.

Part 11 of the Code establishes the qualifications of public health personnel and operators at water treatment plants. In this connection, we are now working with the City of New York trying to find out what operators they have and how they qualify. We are in the process of bringing the operators of the New York Public Water System under the operator certification program.

Part 11 of the Public Health law refers to potable waters. Under this the Department may make rules and regulations for the protection from contamination of all public supplies. Related to this is the provision of Part 5, Section 100 to 158—watershed rules and regulations—which apply only to a reservoir that is used as source for public water supply.

The Conservation Law provides for the Comprehensive Public Water Supply Studies and Reports, which is administered by the Health Department for water supply.

Part of the Public Health Law refers to the realty subdivision water and sewage projects. This provides for review and approval of water supply projects of realty subdivisions and is provided for by an inter-departmental agreement with the Department of Environmental Conservation. We have an input under the Conservation Law which provides for water supply applications, that is, the taking of new water. We review these and make recommendations to the Department of Environmental Conservation's Bureau of Water Regulation. Quite often we appear at the hearings that are held by the Department of Environmental Conservation.

We also have a Federal relationship. It is connected with the U.S. Public Health Service on interstate quarantine drinking water standards in the interstate water supply program. This means that we work with representatives of the Federal government to make sure that the public water systems that serve interstate carriers meet the Federal standards.

We hold a bi-monthly information meeting with the officials of New York City's Division of Water Resources, the Bureau of the Budget, New York City's Bureau of the Budget, Board of Water Supply, the local Health Department and the New York City Planning Commission. These meetings have generated considerable information on activities and needs, and they definitely facilitate the interagency resolution of many complicated problems. If you want to be sophisticated about it, we call it a multi-disciplinary, mutual education approach.

We are concerned about the need for auxiliary water supply sources for communities taking water from New York City's aqueducts during periods of shutdown for maintenance and repair. This problem crops up regularly and probably will get more serious with the passage of time, because the aqueducts are old. They are going to need maintenance. If they have to shut down an aqueduct, then there is a big flap over what is going to be done about it. Incidentally, the communities are responsible for providing these auxiliary water supply sources. The City of New York, in their contracts, does not guarantee either the quality or quantity of water.

In addition, we are exploring the problems and needs for groundwater discharge with officials of Nassau and Suffolk Counties. This is a very complicated problem. I am sure you have heard a lot about it, and we are going to meet with Nassau people next week, as a matter of fact.

We feel that the Commission's charge is considered to embrace a multiplicity of problems, some of which are not directly or statutorily within the Department's purview. These problems are recognized as all-inclusive concerns for the Commission and the water-consuming public in the study area. We also feel that we would presume upon your charge by offering any suggestions or recommendations at this time. Please do not consider this as a lack of cooperation. We will talk with you or discuss anything, but we do not feel that we should make proposals because your charge is much broader than our authority.

The Department may or may not comment on the Commission's findings, conclusions, and recommendations when they are issued. That is just a general position. We would like to hold the option open on that particular point.

We feel that your activities are very promising and will make a substantial contribution for public water supply systems in the State of New York. We will cooperate in every feasible way with the execution of your assignemtns.

Gentlemen, I thank you for your attention. If you have any questions, I will be glad to try to answer them.

DISCUSSION

MR. HENNIGAN: When the Water Resources Commission was abolished and their authority transferred to the Commissioner of Environmental Conservation, wasn't the hearing requirement also done away with?

MR. FAUSTEL, Chief of Design Section, Bureau of Water Supply.

No, sir. The duties of the Commission became the administrative responsibility of the Department of Environmental Conservation. The mechanism has not changed.

The hearing is set up. If there are objections, a Notice of Appeance is filed by any party. After the hearing notice is published in a local paper, and if there are no objections, then the hearing can be canceled.

CHAIRMAN CONWAY: Well, then, what is your role in these cases?

MR. FAUSTEL: Our role has not changed with the creation of the new department. If you want to take water from somewhere in the State of New York for public water supply purposes or if you want to serve an area with public water that has never been served before, you are required by the law to make application to that department to do so. This brings about the potential need for a hearing. For example, if I am a neighbor of yours and I think I ought to serve the area you want to serve, I have the right to come to a hearing and say so. As the Health Department, we have participated in public hearings throughout the years in terms of two things. First, is the degree of treatment that we consider adequate, and second, is the quantity of water being provided to the consumer adequate from our sanitary overview? So we have always been a technical service arm to this group in terms of the features that are the Health Department responsibilty.

Until 1967, we were a recommending agency to the Commission. In 1967 the code was changed. The Commissioner of Health now has the right of approval of plans and specifications as well as inspection. Therefore, we continue our recommendation function to the Department of Environmental Conservation in terms of their applications, but we also have our own responsibility under the law to approve what is going on in terms of the construction plans and specifications and the completed works approval.

CHAIRMAN CONWAY: This is somewhat of an overlap, isn't it?

MR. FAUSTEL: It is an overlap in a legal sense. Its not an overlap in a working sense, because the Department does no review. It relies on us to do it.

MR. HENNIGAN: What happens if you disagree?

MR. FAUSTEL: This is what led to the Commissioner of Health having independent responsibility. I think disagreements over the years were rather seldom.

MR. BUMSTEAD: I have to say that we have a very excellent working relationship with Mr. Vopelak's group. We just try to work things out so you do not have disagreements. You have to get at the basic facts; and if you get enough facts, you can eliminate disagreements quite often.

MR. FAUSTEL: We are not the only agency that participates, by the way. The Public Service Commission can participate in the hearing mechanism if it is a private water company. If it is a district formation, they must receive approval in terms of the financial arrangements from the Department of Audit and Control.

CHAIRMAN CONWAY: Why is the system set up this way?

MR. FAUSTEL: If you go back over the years, there are two reasons. One is, when it was a commission, it had representatives from every State agency, plus industry, etc. If it was a controversial application, those people ironed it out with all the parties participating, which was a goodmechanism. Now, we have lost that, and we have the administrative procedure, which is much faster, more efficient but relies on meetings.

The other reason is a little bit fuzzy in the sense that it is debatable whether the basic law allows regulation of all uses for water, of the water resources of the State of New York or whether it is specifically for public water supply uses. In other words, if that law in

fact does allow regulation of the withdrawal of water for industrial, agricultural, and other uses, then can you manage the total resources? Right now we are managing via the mechanism only the resources used for public water supply purposes. So, in effect, over the years, we have been managing water resources but only for public water supply purposes; and the rest is do what you will.

MR. BUMSTEAD: Incidentally, the rest is considerably more than public water supply in terms of volume.

MR. FORSTER: Would you be concerned about the construction of a nuclear power generating plant upstream from a point where the Hudson might be skimmed to augment the supply going to the City of New York?

MR. BUMSTEAD: We would be concerned from health aspects and particularly concerned with continuous monitoring to determine quality.

At the present time, the information we have is that these hazards, in general, are much more overemphasized than is perhaps justified. Actually the radioactivity intake you get from drinking coffee is much higher than an environmental problem living near a reactor.

The water is used for cooling only and it is protected. There is a possibility of a leak or some transfer. But this thing should be prudently monitored and controlled.

MR. HENNIGAN: We have been having meetings with the county people. One thing that comes through loud and clear is the need for more water in the service area of the Commission, and the need to improve the administrative structure. There are approximately 529 water systems and 279 local governments. This poses the administrative problem. On top of this, we have the City of New York, which is, in fact, a regional system.

So these are some of the things that we have got to face. I mention this just to set the stage. Now, one of the great interests of the Commission is going to be water quality. This is where you people have a large role to play.

In Suffolk and Nassau Counties, and in Queens, there is the issue of public policy relative to the treatment and discharge of wastewater. People have alluded to the nitrate problem in Nassau County, the water quality in general in Suffolk, the question in Queens of pulling down the ground water so that it is now some thirty feet below mean sea level, and the quality considerations of some of the wells from the two private water companies in Queens.

I would be interested in any comments you have relative to water quality for water supply purposes. Let's restrict ourselves, first of all, to the Long Island situation, because here we have the most serious problem.

MR. SYROTYNSKI: Water Operation Section, Bureau of Water Supply:

This past year we entered into a contract with USGS. We have made an increase in laboratory capability, in an attempt to get a readout on Part 72. This is the drinking water standards for 400 some odd supplies in the State of New York.

With that premise in mind, we have allocated a certain number of samples to each of these counties in an attempt to get a readout beyond the nitrate problem as far as what toxic substances or what pesticides, might be involved and the degree of concern that should be exhibited for these chemicals. We have a considerable amount of data now being collected. Up to this year, we had zero data. So this is the extent of sampling being accomplished for Long Island. We do not have a readout at this time, but I think we have alluded to nitrates; and I think this is a good way to express it. Until we get the data, we really do not know what the problem is or the extent of the problem.

MR. BUMSTEAD: Once we obtain and interpret this information for your area, we will make it available to you. We plan on taking the samples four times a year. We did it twice last year. We also have another program that takes mostly seasonal samples.

MR. SYROTYNSKI: This program is broken down to cover 400 distinct water sources in the State of New York, both ground and surface.

Long Island is all groundwater, and they are not monitored on a seasonal basis. Just one sample a year is taken in Long Island and the southern tier counties of Rockland, Westchester, and Dutchess. Poughkeepsie is a quarterly station because it uses a surface supply.

MR. FAUSTEL: Perhaps one thing we did not make clear here is that this special survey includes all the parameters in the drinking water sstanards which are costly to run plus some others which USGS said they would do. Our normal day-to-day, year-to-year, local public health program, which comes around once or twice a year, does only very selected traditional parameters based on our past experience.

I would like to add a couple of other problems that pertain to that question.

One is the regulation of the use of water resources of the State of New York. This takes us back into the old Water Resources Commission-type function and DEC's commitment.

There are water resources on Long Island which have been destroyed. This may invite your attention or not invite it, in terms of how did that happen because we have this law. For instance, there are some aquifiers in New York City and Queens that have been ruined. At the same time, a second thing that should be considered is that we have been active in the sense that Nassau County in particular has required certain communities to abandon some wells based on water quality.

We have a legal case pending now with one of the private water companies in terms of not meeting the drinking water standards. This case is trying to be resolved between the private water company and New York City before our legal actions continues further.

There is current interest in terms of treatment for such items as nitrates or other constituents but an extreme lack of funding from anywhere to carry this out. So it almost falls back on the local water purveyor to pay for this treatment. It is still easier for him to locate a well somewhere else. These are some of the things that are going on now in terms of our involvement.

MR. HENNIGAN: I think it is important because the history of urban water supply development is the development of supplies close in; then as the population moves out, the abandonment of those supplies as they become polluted.

This has happened on Long Island already, and apparently it is starting to happen in Queens.

We have got to project into the future what some of these water supply needs are. This problem of abandonment of existing supplies, because they are no longer satisfactory complicates finding adequate supplies to meet these projected demands. For example, if this happens in Queens, we pick up another 70 million gallons a day demand.

MR. FAUSTEL: This is where the comprehensive water supply studies help give you an overview. Whether you agree or not is something else, but one of the things that I think it tends to lean towards is that if you solve the "New York City Problem" in terms of source, then you solve an awful lot of other problems source-wise, not necessarily administrative-wise.

It requires some major ramifications in terms of affecting State conservation groups. This has already happened in terms of where we are going to go for this water.

MR. SYROTYNSKI: This also brings up New York City's aqueducts and most of the aqueduct systems that do purchase from New York City. New York City has indirectly expressed the concern for reliability of delivery in terms of maintenance of the aqueducts that they possess. This reliability is being challenged because of lack of inspection of those

aqueduct facilities for the last eighty years. They are suggesting that communities look for alternate sources, because the shutdown time, as has been experienced in the past year or two, has been for longer and longer periods. This problem is going to be more and more critical as time goes on in terms of contingency plans for the emergency of the shutdown of the aqueduct. We have had makeshift contingencies to meet the problem.

MR. HENNIGAN: This is embarrassing, when we talk about a regional water system. You have a regional water system that supplies water to a large number of people outside the City of New York but it makes no guarantees or has no obligations as to quantity or quality.

It is a rather peculiar relationship between the supplier and the user. The user can say, "We don't guarantee payment." You really don't have any contract at all.

MR. SYROTYNSKI: This is an element of unreliability for the whole area.

CHAIRMAN CONWAY: You certainly could not expect every concentration of population to have an alternate water supply.

MR. SYROTYNSKI: Well, some do. They have evolved their own water supplies.

CHAIRMAN CONWAY: They may have short-term alternatives but they certainly are not going to be able to develop a whole system that can act while they repair their main supply.

MR. SYROTYNSKI: No, but systems that would give them a capability for 60-or-90 day shutdown.

MR. BUMSTEAD: If you have one transmission main serving the communities, it is always desirable to have two. New York City has got one for all these communities. It is just a matter of engineering capability.

MR. SYROTYNSKI: The procedure now is to shut down the aqueduct, then sandbag sections to provide water appropriate for those intakes for water withdrawal for minimum use. In certain water systems that use the aqueduct, this is the only thing that presently can be done to support continuous water withdrawal.

MR. HENNIGAN: Are you talking about mainly the Croton and the Catskill aqueducts?

MR. BUMSTEAD: Mainly the ones on the east side of the Hudson.

MR. FAUSTEL: Another interesting fact is that somewhere around 72 or 75 percent of the systems throughout the State of New York are inadequate in one sense or another. Now, with that kind of a figure, where do we start in terms of our responsibility for implementing?

You talk about some of these problems, but it is really a gross problem if you are looking for optimum water services. Quantity, quality, reliability, etc. must all be considered. For example, if you go to a community and say, "this aqueduct is going to shut down every now and then, so you ought to have so much storage," this may not be their prime problem. Their prime problem may be three-inch mains or four-inch mains so that people have only five psi.

Some systems have not been inspected in depth for quite some time.

MR. HENNIGAN: This is Long Island's situation. The system aspects and the interrelationship of sewage disposal or wastewater disposal and water supply. I think you would agree that in this particular situation these two functions are interdependent. If we have no control of wastewater disposal on Long Island, are we automatically doing away with the use of that groundwater for water supply at some point in time?

MR. BUMSTEAD: It appears to be so. We are in favor of the principal of recharge. We feel that all possible storm water should be recharged at the present time.

We also feel that the technology for treating the wastewater plant effluent prior to recharge leaves much to be desired. There should be a highly concerted effort to improve the technology and to bring it down into an economic feasibility range. We are definitely in favor of the principle of recharge with present technological limitations.

Concerning the overriding factor of protecting the public health, we would not want to put material back in the ground; that creates an addage of harmful constituents.

MR. HENNIGAN: If we extend this upstate, we now run into the same type of problem with the Croton supply. As the watershed is urbanized and the population increases, water supply quality problems are encountered. This, again, raises the issue of the feasibility and viability of these supplies for water supply purposes for the indefinite future.

MR. FAUSTEL: It raises some issues in terms of zoning too. What is the responsibility of that local government to prevent this from happening? Can you correct it all through water or sewage? Personally, I do not think so. You might correct it better through land management, perhaps in order to avoid that same problem from being duplicated elsewhere.

MR. BUMSTEAD: We are working very closely with the City of New York pushing for a water treatment plant for Croton supply. This is a very complicated problem, both physically and technically. We believe that engineers will be hired and there will be a substantial pilot plant built. The primary objective of this plant will be to discover new technology for providing treatment at the lowest possible capital and operating cost.

I do have to say the City of New York has been very cooperative on this. We do not have any grants. We are just working with them in a persuasive way. They have appropriated, I believe, $250,000 for this study. So they are aware, as we are aware, of the degradation of water resource of public water supplies with an increasing growth of land development.

CHAIRMAN CONWAY: The ultimate answer in the Croton, as population increases, is going to have to be to treat the wastewater and also the water in the Croton Reservoir as is presently done.

MR. FAUSTEL: I would like to suggest to you that the thinking has to be expanded beyond that point. The answer may be some other kind of control, as well as trying to further treat the water and/or the sewage.

For example, if the cost of putting in sewer and water facilities is excessive, limit the population allowed. We are presently nowhere near that kind of thinking in local government. In terms of the economic cost of alternatives for some of these things, I think perhaps this will have to be considered in the future.

MR. BUMSTEAD: I subscribe to the concept in general that there will have to be a limit on land use. As long as five years ago, when I had charge of the Comprehensive Sewage Studies, it was beginning to become apparent in certain areas that the assimilation capacity indicated in those studies even with a high degree of treatment would in fact impart a land-use limitation. This was because the receiving stream even with the best treatment possible, could not handle any more than so many people on the land. It is a concept that is foreign to all of us; but from a practical standpoint, it may have to be applied in certain places.

MR. SYROTYNSKI: With regard to the current traditional concept of "pollution control" or "treatment of waste water," we are not running Part 72's. We are running suspended solids, total solids, and those gross parameters that we have been traditionally concerned about. We have not examined what is actually being discharged. This goes back to the adoption of 170 as to what specifically can a wastewater treatment plant discharge to a receiving water used for public water supply.

MR. HENNIGAN: I missed something here. What is this 170? Are you trying to establish effluent standards for waste treatment, or standards for A and AA and GA waters?

MR. SYROTYNSKI: You recall the statement made about A and AA and GA waters. It says, in essence, that waters discharged (effluents) shall meet the Federal Public Health drinking water standards, and shall not be deleterious to receiving waters.

Part 170 interprets what is deleterious. This essentially sets standards for those parameters of concern as to biological, bacteriological and chemical characteristics.

MR. HENNIGAN: Have these been adopted?

MR. BUMSTEAD: Yes. August 11, 1971.

MR. HENNIGAN: Now, was this passed as a chapter of the Sanitary Code?

MR. SYROTYNSKI: No, as New York Code of Rules and Regulations, Part 170.

MR. HENNIGAN: By the State Commissioner of Health?

MR. BUMSTEAD: Here is the idea. Every source of water supply to which this part is applicable shall meet the standards of quality set forth herein and shall be protected from and free of contamination. Then it goes on to specify the physical, chemical, microbiological, inorganic and organic chemicals, pesticides, and radioactivity limits.

MR. HENNIGAN: Now, are these stream standards or effluent standards?

MR. BUMSTEAD: Stream standards. It is subject to interpretation, but really it is at the point of intake of the public water supply. That is for practical purposes.

MR. SCHICKLER: I would like to ask a question concerning future possible source of water. Perhaps, we are talking about very far in the future. What is the position of the Department on direct reuse of wastewater? In other words, take the effluent from the sewage disposal plant and put it right back into the mains for ready use.

There are some major cities that are considering it, in fact, are working on programs. For instance, the City of Denver is in the process. Of course, they are talking about ten to fifteen years in the future.

MR. BUMSTEAD: Let me state one thing. As yet the Department has no official position. This discussion then is confined to our professional opinions.

MR. FAUSTEL: From an engineering standpoint, direct reuse has never been tried. The best example is the Chanute, Kansas, experience. It was put through the sewage plant and then through the water plant, in other words, not the way you defined it. Although it was acceptable, it was safe, it was potable, the people did not accept it and they did not drink it.

I do not think we have progressed, from what I read in the engineering literature, beyond that point. In other words, in that case the water was potable, but it also had a "head of suds" on it, etc.; and people refused to drink it.

MR. SYROTYNSKI: Bacteriologically, we are not talking about Part 72 in the drinking water standards. Chemically, this is very pertinent.

It is like the Lake Tahoe Plant. Readers Digest says that it produced drinking water. I have not seen a Part 72 yet. Because I believe in Part 72 as a chemical concern, I would not drink it until I saw one.

MR. BUMSTEAD: We would have to say that direct reuse would be looked on with much surprise. The matter of public health protection is our primary concern, and the risk to the public would be very high.

MR. SHICKLER: Of course, I am talking about a future program, not today. In other words, we have to think of five, ten, fifteen to twenty years.

MR. BUMSTEAD: We have no research programs at the present time. We have a lot of ideas, but we do not have any funds. I have to admit, we want to explore with the Federal government some of this, but we just did not have the manpower to get at it.

MR. SCHICKLER: Is the Federal government doing most of the work in this field?

MR. FAUSTEL: They do not have any funds allocated for water supply purposes.

MR. BUMSTEAD: There is a great need for all of us to express our opinion to our representatives to get adequate funds for public water supply, treatment and research.

MR. SCHICKLER: I know the American Water Works Association is very active in the matter of trying to divert some of the funds from water pollution to water supply.

MR. BUMSTEAD: Well, funds for water supply are minuscule compared to the vast funds for water pollution control. I am not fighting water pollution, but, my God, people drink water and need it. You have got to have it. In any public health or sanitary engineering program, a safe, adequate public water supply is the number one objective; and it always has been.

MR. CONWAY: Well, as far as you know then, there is no community that is actually successful in treating its wastewater and putting it back either into the water system directly or into the water treatment plants.

MR. BUMSTEAD: I do not know of any.

MR. FAUSTEL: In a sense, Long Island does what you say, since it uses a sub-surface sewage disposal system. In a sense there are a lot of communities on rivers and streams that are doing this. But your definition did not specify a water treatment plant.

MR. CONWAY: We are just exploring this. You are saying technology is sufficient in bacteria removal but not advanced enough for minerals, chemical or exotic removal?

MR. BUMSTEAD: That is correct. Treatment for removal of chemicals, pesticides, and organic removal needs considerable research.

MR. FAUSTEL: An economic comparison between the development of more high quality surface supplies to the use of reclaimed water would be extemely interesting.

MR. SYROTYNSKI: With respect to researching your second question and technology that is being considered, the USGS contract does not specifically give us this capability. However, the readout we have mentioned, if it is positive, then we can follow it up. So to the extent that we can follow it up with our own resources, we do. Such a case existed in one state institution at South Kortright, New York. Mercury in higher levels than the acceptable limit was found and reported. Then the treatment capability of that system was followed up so that we could do an evaluation. However, this was not a pure research-type thing.

MR. HENNIGAN: One issue that has been raised—and this is an old one—and that is the recreational use of water supply reservoirs. The question of more public access to New York City reservoirs has been raised by some of the local people, particularly in Ulster County. I would be interested if you have any particular feelings or comments about this?

MR. BUMSTEAD: In general the conclusions indicated from the first part of our USGS Bureau of Water Supply Monitoring Study indicate the quality of water is much better in upland sources where you minimize any of these related uses. In other words, our quality situation is much better if these other uses are kept out.

MR. SYROTYNSKI: I am extemely conservative when it comes to opening up reservoirs for any use other than public water supply in that you have a landslide effect throughout the State of New York. We would require filtration and complete treatment facilities prior to opening up such a reservoir for water supply. Even at that, as in the case of Troy, it was open to a limited extent after the construction of a new plant because this was the city's prerogative.

The other part of this is that there are plenty of recreational areas and adjacent areas other than public water supply sources. We are not hurting for a water resource in that respect, as may be the case in Western states. There is plenty available, and only as a last move, would I go along with opening of reservoirs where complete treatment facilities are not provided. It is a step backwards.

MR. FAUSTEL: Historically, communities built reservoirs on the top of hills, and nobody would ever go, except some dedicated hunter. There are a lot of these systems throughout the State of New York, and they served for quite some time back in 1900 before they even had chlorination. However, the policy statement that we have recognizes that, with full treatment, recreational use is acceptable.

But, the other thing to remember is that in the last ten years there has been an acceleration in terms of what standards should we have for drinking water, and the standards that are being reconsidered by the Federal government and the AWA quality goals are now converging on these old systems. Whether they have recreational use or not they are going to require filtration just to meet the standards that may be prudent in the next two, three, or four years.

MR. SYROTYNSKI: I also think we are still riding on the conservative approach as used forty and fifty years ago in terms of protection of water supplies without complete treatment. That is, without that big capital investment that filtration plants require.

CHAIRMAN CONWAY: I would suggest that extensive impoundments upstate would not be a practical matter unless it is probably tied in recreationally, especially if these are located in areas where there are other extensive impoundments.

MR. BUMSTEAD: If that is the case, all we want is treatment.

MR. FAUSTEL: Our drinking water standards will support that, because it will require treatment.

CHAIRMAN CONWAY: There is a need for much greater coordination between the upstate counties and the way New York City opens and closes its reservoirs. For example, the Department of Conservation stocks fish in the streams, and three days later, New York City lets go a big flow. Of course, the fish are out of the County by nightfall.

This points to the need for total coordination with the use of this water where it has historically been run in this disconnected type of fashion.

MR. FORSTER: Under the laws of 1915 when lands were acceded to the City of New York for development for water supply purposes, the people reserved the right to fish, boat, and cut ice. In 1967-68, the Department had issued about 150,000 fishing permits and about 2,400 boating permits. But the type of boats was limited to flat-bottom row boats, no power boats, canoes, or sailboats.

The department wondered if they should open the doors any further and decided not to. In general, the sanitary engineers told them that such limited usage had no appreciable effect on water quality. The boating permit can be revoked if the reasonable sanitary rules and regulations are broken.

I would like to revert for a moment, if I may, Mr. Chairman, to the question Mr. Schickler asked for reuse. Dr. Horning was the Science Advisor to the President of the United States, and in 1966, he field a rather important report pointing out that under the philsophy of reuse, and with a redesigning of the sewage disposal plants of the City of New York, some 900 million gallons a day eventually could be reused. This water was to be mixed with Delaware and Catskill water. I think it proposed pumping the water up to Rye and Kensico and mixing it with the Delaware and Catskill water that came in. Are you familiar with this report?

MR. FAUSTEL: No, Sir.

MR. BUMSTEAD: We would love to see it.

MR. SYROTYNSKI: It sounds like one of the suggestions that would have been made during the drought period in '65 and '66.

MR. FORSTER: It was. Immediately subsequent to the drought period, Dr. Horning then became a Vice President of Eastman Kodak. He is now President of Brown University. In other words, he is a scientist of established reputation.

MR. SYROTYNSKI: During the drought, the taking of the Hudson River water was in the ratio of 1:4 or 1:3. During the hearings at the time that Chelsea was being reinstructed as a pumping station on the Hudson, they were not talking in terms of 900 million gallons of water a day.

MR. FORSTER: It was limited to, I think, 100 million gallons a day.

MR. FAUSTEL: That's right. It is interesting, if you go back into that history; at the amount of opposition to the City of New York by certain people in the Federal Health Agency. Even with chlorination at Chelsea and with subsequent chlorination at West Branch, Kensico, Hillview, Jerome; it was only our effort that prevented the Feds from not allowing them to do that. How the attitude of these people has changed since 1966 would be the question, not this kind of intermediate reuse. Would you or I accept this in our communities? Or is there some kind of a public relations program that we are really talking about as opposed to cost?

MR. FORSTER: I wondered whether a mixing of this properly treated water with the water supply coming from the Catskill and Delaware aqueduct into Kensico and Rye reservoirs wouldn't tend to cure this situation. This is an esthetic problem and not one of purity, isn't it?

MR. SYROTYNSKI: I am not trying to be funny, but you recall the phrase, "Solution to pollution is dilution." I have been saying lately in my own opinion that the solution to pollution is abatement. It does not rhyme, but it makes more sense.

Going back to what we are talking about in characterizing what we are going to put back up, this disparity still exists between that which is to be treated as waste water, and that which is to be treated for drinking water.

MR. BUMSTEAD: There is a difference.

CHAIRMAN CONWAY: It seems to me that we will have to seek reasonable solutions to these things. The only thing you can abate to a large extent are the exotics and various industrial wastes. In Rockland County, which we just visited, they use roughly 35 million gallons of water a day; and 35 million gallons of wastewater is dumped into the ocean from Rockland County. That means you have got to resupply this amount each day with very little recharge from their own system. It is going to be pretty hard to explain why something cannot be done to bring some of that water back into the supply rather than let it go on out to the Atlantic Ocean.

MR. HENNIGAN: One of the issues before this Commission is this question of additional water supply. The recommendations that have come out of a lot of studies, including the five-year study for Westchester and New York City, the NEWS Study, seem to focus on the Hudson River.

This raises, of course, the fundamental issue of the quality of water in the Hudson and how this quality is going to be controlled and maintained over the next fifty-year period. This is related to the issue that Commissioner Forster raised relative to construction of nuclear power facilities upstream. I would be interested in what your comments or feelings are about this.

MR. BUMSTEAD: Well, again when the treatment plants are built, the quality should be substantially improved.

MR. FAUSTEL: Yes. The quality is excellent, as was demonstrated back when Chelsea was proposed.

MR. HENNIGAN: Now, when you say "excellent," are you talking about the bacteriological quality or the Part 72's?

MR. FAUSTEL: No, it is not the Part 72 program that was started just one and a half years ago. The quality of Chelsea was excellent in terms of the traditional parameters of raw water quality for public water supply use with standard treatment. The argument at Chelsea was, could this be done without standard treatment. The only questions that came into play were: (1) if you remove these amounts of water somewhere, does the salt front come up and if so, how far; and (2) your question in terms of the potential of the Hudson River power purposes. We have learned from our radiological expert that you could have 250,000 or so of these reactors around the Albany area, and you would still get more equivalent effects from ingestion of coffee or alcohol, which is fantastic.

So, the real problem is if you take out too much water. It is a hydraulic problem if the salt front comes past Poughkeepsie, then what does that mean? Does that mean New York City supplies Poughkeepsie and shut Poughkeepsie down? Is that how you get out of that? Or how does it affect industry?

Those are some of the questions. In terms of the treatability of the water, there is no problem.

CHAIRMAN CONWAY: During the drought period, the salt front moved a very, very small amount.

MR. FAUSTEL: Yes, except that it exceeded the drinking water standards for chlorides at Poughkeepsie for approximately two weeks.

MR. HENNIGAN: You don't feel there will be any serious water quality question, then, in the use of the Hudson River source?

MR. FAUSTEL: No, I do not.

MR. HENNIGAN: Another issue I would like to raise, that John mentioned previously, is the need for improvements to public water supplies in general and specifically, in the study area of the Commission.

Also, questions about the level and the quality of pure water supply service. I am interested in the relationship of this to the organizational and financing questions, which are serious issues as far as we are concerned. For example, areas such as rate schedules, the use of excess funds, administrative control over the system, the issue of metering, which is always brought up. These things are not direct water quality questions, but they have a definite impact on the level and quality of public water supply service.

I would be interested in getting some response from you relative to these areas.

MR. BUMSTEAD: You cannot have either quality or quantity without a good institutional and operational financial set-up. It is basic. It is absolutely fundamental.

One of the big things you did not mention is that in a lot of communities there is a terrific diversion of funds taken in from water service charges and then diverted to the general fund. We are strongly opposed to this because if we had the funds that were generated by water supply use, you would be able to do a lot more in providing new improvements. This is a very serious problem.

Also, the governmental units are trying to have their own imperium and not cooperate with one another. It is a serious problem for good water service, and it just combats the whole concept of a well-managed utility. Everybody is competing for the same water sources and funds. This quite often leads to duplication of facilities. They are unnecessary facilities, because it is not a coordinated, well-planned utility operation.

MR. HENNIGAN: Also, part of this is the proliferation of small private systems that are generally not well managed.

In most of the counties that we have been in so far, the issue of the small, privately owned systems has been raised, sometimes with very strong recommendations.

For example, in Suffolk County, the Health Department recommended that fifteen small supplies be immediately taken over by the County Water Authority. This was because they were in such terrible shape that immediate action was desirable. In other counties, the question of the small private water supply has been raised, usually in a very critical manner, especially relative to quality.

MR. BUMSTEAD: In terms of cost of acquisition?

MR. HENNIGAN: No, level of service.

MR. FAUSTEL: This proliferation of small private water companies is generally due to a lack of interest by the local governments in going into the water business.

MR. HENNIGAN: What has been your experience with these water supplies?

MR. FAUSTEL: With this type of a small supply? Until ten years ago it was a lousy experience. I would say in the last ten years, we have tightened up the standards considerably. But there is an awful lot of pressure in terms of why, as a bureaucratic agency, don't you bend a little bit in terms of the standard. After all, all we are doing is providing a place for these people to live. You don't have the town building code, you don't have this and you don't have that. Therefore, you are down to a very small base.

Even the Public Service Commission has tightened up considerably in the last three years. This is because when you finally reap the reward of bending a little bit, three or four or five years later, the town eventually gets stuck with it. Plus the fact that you have a fantastic public relations problem because people have had lousy water.

One of the major problems is that we have all these inadequacies, but in order to correct them you don't do it by telling a guy to correct it. You do it by really having to work with him whatever it is; and this takes such a fantastic amount of manpower.

MR. SYROTYNSKI: On top of this, you have the problem that local water officials or town supervisors are generally elected. You start working with one, you get something done part way, and he is gone. Then you have to indoctrinate the next guy to keep this thing moving.

MR. BUMSTEAD: Sam has just touched upon a really critical problem. The fact that you have public officials who may be in office one or two terms is a real problem. You have people coming in that don't even know the codes or the standards. We just cannot work with everybody. So unless you have a bigger coordination to take all these things in on a continuing basis, it just gets to be an impossible problem.

MR. SYROTYNSKI: I think the word is generally out to a town supervisor, and this applies anywhere, that to take over a private water supply is nothing but headaches and determines the next situaiton in terms of elections.

MR. BUMSTEAD: My experience with these private water systems in terms of complaints, deficiencies, and everything else is not at all good.

MR. FAUSTEL: There are some good ones. Spring Valley Water Company, for instance, is a good private company.

CHAIRMAN CONWAY: It is a land use problem, as you pointed out earlier. Yet we cannot just say that all development in Southeastern New York has to come to a screaming halt. That is not the practical answer.

MR. FAUSTEL: Well, that is just a thought, like drinking wastewater. But at the same time, it is an alternative in terms of perhaps forcing people to get together and decide what they are going to do as a master plan.

MR. BUMSTEAD: One of the problems during this time is the fact that perhaps in this business we have all made a very serious mistake in the past of emphasizing how cheap water is. It is going to have to cost more. We came out with a pamphlet where we tried to compare the cost of milk, bread, newspapers, gasoline, telephone, and others to what water costs at a certain price. One of the big things we are going to have to do is just impress people that to get good water, it is going to cost them more.

CHAIRMAN CONWAY: That has been the history, and unfortunately we are in a period where that history is no longer true.

Certain members of the staff may have questions. I know we have at least one.

MR. LACKEY: Concerning these realty subdivisions, with ten to twenty homes having their own private system and probably no treatment; what type of monitoring system is there currently over these systems? Also, what action is taken if a poor system is found, and what would you recommend to change this monitoring system in the future?

MR. FAUSTEL: When the system is in the application stage with the Department of Environmental Conservation, one of the things that the consulting engineer does for his client is make a part of that petition a sample of raw water, regardless of source. The consulting engineer will then, by analyzing that, propose treatment if it is necessary. We review that, and we may agree or disagree, ask for additional treatment, or take additional samples if we feel that information is not extensive enough.

Assuming that the system is approved and goes into service, our local health officials, once a year, stop by and pick up what is a "routine" chemical analysis, routine meaning selected parameters that our laboratory has run for us for years. The Code really

dictates the frequency that chemical samples and bacteriological samples have to be picked up and analyzed, either by the purveyor or by us. From here it is optional. There is a defined frequency of sampling of all the parameters. Now, if the supply does not meet either that frequency, or the parameters themselves, we seek voluntary compliance via a communication with him. Eventually that succeeds or fails; and if it fails, then we have a legal case.

MR. BUMSTEAD: I wish to interject something here. The purveyor, whether a privately owned company or a municipality, is responsible for the operation of his own water system in terms of daily operation, quality, etc. We are a state agency with regulatory functions to set standards and check up on things; but the purveyor's responsibility is preeminent in all of this.

MR. LACKEY: So, essentially, the system is only monitored at the present time once a year, although you are trying to change it.

MR. FAUSTEL: It has been monitored traditionally, but perhaps Sam would want to talk about this. Our code prescribes a frequency, which we are are trying to gear up to around the state.

MR. SYROTYNSKI: Let's not make any tacit assumptions here. We have used the one-on-one case. Let's not generalize to say that we handle all these the same way. We are not in a state of flux, but we are in a state of implementation of Part 5. Part 5 was easier to deal with because it mandated certain bacteriological quality, which was traditional. This is being met and being implemented.

The physical parameters have been implemented 40 percent. Now, this is what is mandated by the purveyor to provide to us. The 60 per cent that remains is done through routine inspection, if and when they are inspected. The inspector would collect a sample to establish the record. That takes care of routine-type analysis.

The sophisticated Part 72, pesticides, radioactivity, is a special readout because of logistical lack of laboratory capability again. We are talking about 1800 possible sources. Potentially, that means 72 parameters times 1800 sources, and you have got an awful lot of samples to do.

CHAIRMAN CONWAY: Does the County Health Deparment monitor this the same way?

MR. SYROTYNSKI: There are three counties that provide for the sophisticated Part 72 sample: Erie County, Westchester is gearing up for it; Suffolk would like to do it; and Nassau may be doing part of it now. Each county has evolved slightly differently. Not every county is the same. Some counties have their own approved laboratories, while some counties have only a part-time laboratory. Other counties have no laboratories, in which case the State has assumed that responsibility as it evolved.

There is no common baseline where all counties are the same. They evolved differently over the last forty years. So you have to examine each one for their programs. This is how you evaluate the County Health Program, and we see that they are doing what they are supposed to do.

CHAIRMAN CONWAY: The ones that have better programs, they are generally monitored how often?

MR. SYROTYNSKI: Well, Erie County just tuned up for the sophisticated sampling plus the routine that they have been doing for years. They bought the necessary equipment to run at least annually the Part 72 requirements.

For the other counties, I would have to see what the code says. It depends on the cource waters. For example, a surface water with chlorination only has to be sampled for physical analyses bi-weekly, but filtration plant normally runs it daily for process control.

It is a matter of saying what is legal sample rather than what we are willing to accept. We inspect our major treatment plant laboratories for 'satisfactoriness' in many cases, which is not under the Federal law, but as a part of our ongoing inspection of the water system we inspect the laboratory for technique and procedure.

CHAIRMAN CONWAY: If you have a sophisticated laborartory, like the ones in Erie, Suffolk, or Westchester Counties, testing samples of local supplies, do you also run tests?

MR. SYROTYNSKI: No, sir. Once this responsibility is given over to the county as part of the contractual arrangement for programs, it is done by them.

CHAIRMAN CONWAY: They fulfill the State function, as well as their own.

MR. BUMSTEAD: We are trying to push the concept of the water treatment plant doing this work for us. We have a problem in getting approved laboratories and mechanisms

for this. Also the logistics of this are horrendous.

We are strongly in support of a State program to get private laboratories certified or approved to do this work. Then this can be pushed down at the lowest operating level. Of course, we will still have overall control.

CHAIRMAN CONWAY: But you would be inspecting the laboratory rather than the water supply?

MR. BUMSTEAD: We would be inspecting the precision of how they do it rather than doing the work for them.

MR. SYROTYNSKI: There is an inherent danger in not controlling it. They would be talking about a problem and you would have different laboratory baselines. The question of who's right and who's wrong.

MRS. VAN DERZEE: Do you have any kind of professional opinion regarding a comparison of small private water companies and small public companies? Are the private ones more or less accepted to give worse service?

MR. FAUSTEL: I do not personally support that kind of statement, because we evaluate each community on its own merit, whether it is a community or a private water system. You can go either way, it just depends on the particular case.

MR. BUMSTEAD: I do not think you should adopt the cliche at all. It varies considerably.

MR. SYROTYNSKI: But you do have better recourse, though, with the water district, smaller ones, equated to a private water company. It is harder to move the private water company than it is to move the water district, because there you have almost a self-expression by the residents of that district. If they want the improvement, they pay for it. The private water company is operating on a greater return, which is slightly different.

MR. BUMSTEAD: It might be said in general that the very small units are more difficult to push into improvements, to get improvements, both in capital structures and operation. In general, they are not as easily pushed as the larger systems with more finances.

MR. MERKENS: On the question of recreation and water supply reservoirs, do you find it acceptable if there is full treatment?

MR. BUMSTEAD: Yes. That is what our policy says.

MR. MERKENS: On the samples that you collected, 400 samples, you have run tests on 72 parameters, is that correct? And are these samples both raw water and finished water?

MR. SYROTYNSKI: Of the 400 separate sources being sampled, 40 of these will be surface water, quarterly monitored on major rivers, lakes, and streams. These are all Part 72's; and for those 40, paired sampling is being exercised.

MR. BUMSTEAD: Paired sampling is one of the raw and one finished.

MR. MERKENS: Municipalities which tap into New York City aqueducts are required by contracts or arrangement to have an air gap in their tap. I am not sure of the technicalities. I just understand that it is a pressure break, etc., and there cannot be any backward movement. Do you feel that this is a reasonable request?

MR. FAUSTEL: Oh, sure. It is practiced in all municipalities.

MR. MERKENS: If you are working with a high pressure in your aqueduct, and you are going into a distribution system which has a lower pressure, isn't this sort of a double protection?

MR. SYROTYNSKI: Unless you assume no breaks.

MR. FAUSTEL: It depends on whatever physical arrangement you have. Years ago all we had was an air gap. Today we have other things such as back-flow preventers, etc.

MR. MERKENS: I mean, by going to an air gap, you keep all the pressure, if you have any pressure at all; and you go to an air gap, you lose it all.

MR. FAUSTEL: Well, if you had the aqueduct at 200 psi, you would have to build in some pressure loss anyhow in order to be able to use the water.

MR. SYROTYNSKI: From your standpoint, it would seem to me this whole question of cross connections is a valid one from the standpoint it has always been around but it has never really been worked with.

There are building codes, plumbing codes, the whole morrass of regulations plus plan review for new projects looking for cross connections. But it has never really been a package to attack the problem and to enforce it. From an institutional standpoint, it is necessary and most of them do not have a program.

MR. HENNIGAN: At the meeting we had with Westchester County, a complaint was raised relative to this. The basis of the complaint was that the community was taking water from the city aqueduct. They had to provide a clean air break between the point of taking and the point of delivery into their system. The people that took it made the complaint they did not have any other source of water except the city. Therefore, they did not know what they were protecting the city water against. Now following on this logic, does the city provide the same type of mechanism for a connection in the city?

MR. FAUSTEL: No, but do they require the same protection at the service connection in the city?

MR. BUMSTEAD: I am not certain. I will try to find out for you at our bi-weekly meeting.

MR. HENNIGAN: Also, is there data available on interconnections between two systems, particularly in this study area.

MR. SYROTYNSKI: We can get a readout on the degree to which programs have been initiated and based on local health units: response, whether they are enforced or not. It is part of our tabulation. We try to get such readouts because they are required in the code. I am sure a considerable number do not have programs and do not do anything about it. Or if they have them, they are archaic.

MR. SCHICKLER: Of course, this is a national problem. I know the American Water Works Association, over the last year or two, has devoted a lot of time and energy to just this problem.

CONCLUSION

CHAIRMAN CONWAY: Gentlemen, the Commission thanks you for coming this morning and making this presentation. It has been very helpful to the Commission. We will certainly keep coordinated with the Department of Health, as with all the other major State departments concerned.

APPENDIX A

ATTENDANCE

SOUTHEAST WATER SUPPLY COMMISSION

Commissioners
E. Virgil Conway, Chairman
Herman Forster
William N. Schickler

Staff
Robert D. Hennigan, Executive Director
David A. Duffy, Administrative Assistant
Paul W. Merkens, Director, Engineering Studies and Analysis
Steve Lackey, Assistant Director, Engineering Studies and Analysis
Harold Breon, Water Resources Engineer
Jeffrey Brewer, Research Assistant
Robert Redmond, Staff Attorney
Irene Baker, Public Relations
Leslie Van Derzee, Research Associate

DEPARTMENT OF HEALTH

John Bumstead, Director, Bureau of Water Supply
Gilbert Faustel, Chief Design Section, Bureau of Water Supply
Sam Syrotynski, Water Operation Section, Bureau of Water Supply

Observer
Edward Karath, Department of Environmental Conservation

PRESENTATION OUTLINE

October 27, 1971—9:30 a.m.
Environmental Facilities Corp.
Conference Room—10th Floor
41 State Street, Albany

Mr. Conway, members of Commission, and guests:
- Invitation appreciated.
- Department's deeply interested in public water supply improvements.
- Too long "inundated" in avalanche P/R water pollution.
- Safe, adequate, palatable public water supplies is the number one public health objective.
- Competition for public funds aggravates the drive and critical need for more and better public water supply facilities across the State.
- Please raise your hand if you wish to ask a question during the presentation. I prefer to try to answer questions during the presentation so that we can have maximum explanation and understanding.

State Health Department interest WS needs of SENYS

- Dept. Intensely interested in public water supply problems and needs—SENYS.
- CPWS studies have thrown considerable light on these problems, and in some cases generated considerable emotional response.

No inconsiderable benefit has been the bringing of public water supplies needs into sharp public focus. Generation of local interest and concern provides the motivation for short- and long-term improvements and expansion projects.

The Bureau continues to press for creation of county water districts to cope with areawide water utility needs. A county, under the State Constitution, is the largest governmental unit that can create such a district.

- the Department's concern is basically with the quality of drinking water delivered to the consuming public.

In this connection, the Department recently (August 11, 1971) promulgated Part 170 (NYCRR) "Sources of Public Water Supply." Part 170 was "promulgated to protect sources of water supply dedicated for present or future beneficial public use for domestic and municipal purposes." Its limitations are in these categories: physical, microbiological, inorganic chemicals, organic chemicals, pesticides, and radioactivity.

Part 170 applies to water classified as AA, A, and GA, sources of public water supply.

Part 170 is a prudent public health administrative action because of the variety of wastes and exotics being discharged to public waters. Conventional water processes do not remove many of these exotics. A new technology is being sought but as yet is not available for economic plant-scale utilization. Therefore, prevention of unwelcome discharges is our only recourse to protect public drinking water at this time from containing unwanted constituents.

– the scope of the Commission's charge is appreciated. Of necessity state and local laws, debt structures, utility financing, available water resources, management of water utilities and other interrelated concerns fall under your scope.

We are vitally interested in the resolution of the basic institutional, financing and legal problems which underlie successful areawide water utility operational effectiveness. And will contribute whatever there is in our files to your informational base.

To date, we have submitted to your executive director copies of all available comprehensive public water supply study reports and much other data on public water systems.

We stand ready to work with your staff whenever a need is made known to us, but I must plead manpower limitations which may impede our rapidity of response. All members of the Bureau have been in the field since July making evaluations of critical public water supply systems, each of which requires preparation of an extensive report and follow-up contact with the affected purveyor.

Statutory Authority

See yellow sheet–"Statutory Authority and Rules and Regulations for Public Water Systems"

- NYC is now included under the Sanitary Code.

- Part 170 Sources of Water Supply (See above).

- Public Health Law–NYSDH shall "Supervise and regulate the sanitary aspects of water supply."

- Part 72 (10NYCRR72) – Drinking Water Standards (limiting concentrations of substances in drinking water).

- Public Health Council – Sanitary Code (PHL)
  "shall have power to establish, amend and repeal sanitary regulations–known as sanitary code–."
  Code may
  (a) deal with matters affecting the security of life or health or preservation and improvement of public health. . .
  (b) prescribe qualifications of public health personnel. . .

- Part 5 (10NYCRR) – Drinking Water Supplies provide for. . .
  (a) approval of plans and completed work;
  (b) reporting emergency changes (in water systems);
  (c) approval of fluoridation;
  (d) disinfection;
  (e) protection, supervision and samples of new sources;
  (f) physical connection (cross connection);
  (g) bottled and bulk water;
  (h) providing treatment of public water supplies; and
  (i) operation of a public water supply systems.

- Part 11 (10NYCRR11) – provides
  for "Qualifications of Public Health personnel and operators of water treatment plants.

– Part 11 Public Health Law – Potable Waters
"the department may make rules and regulations for protection from contamination of any or all public supplies of potable waters and water supplies."
(a) Part 5 100-158 (10NYCRR 100-158)
provides for . . .Watershed rules and regulations
(b) Part 170 – Sources of Water Supply
(referred to above)

– Conservation Law (Article V, Part V-A Section 442) provides for. . .
Comprehensive Public Water Supply Studies and reports. This program is administered by State Department of Health.

– Public Health Law – Realty Subdivision Water and Sewage Survey
The Department reviews and approves water supply projects of realty subdivisions. (Interdepartmental agreement).

– Conservation Law (Art. V., Part VI, Sect. 450-480): Water Supply
Water supply applications (taking of 'new' water) are reviewed by the BPWS and recommendations are made to the Bureau of Water Regulation, DEC. The BPWS often appears at such hearings.

– US Public Health Service Regulation Chapter 1, Title 42, Part 72. Interstate Quarantine–Drinking Water Standards–Interstate Water Supply Program.

Ongoing activities of BPWS related to Commission's mission

(a) The BPWS holds bimonthly informal informational meetings with officials of NYC's Division of Water Resources, Budget Bureau, Board of Water Supply, Health Department and Planning Commission to generate information on activities and needs and facilitate interagency resolution of the many complicated problems.
This is a multidisciplinary "mutual education" approach.
(b) The Bureau expresses its concern for the need for auxiliary water supply sources for communities taking water from NYC's aqueducts during periods of shutdown for maintenance and repair.
(c) The BPWS is exploring the problems and needs for ground water recharge with officials of Nassau and Suffolk Counties.

Reports, etc. available to the Commission

(a) all reports have been submitted to your staff.
(b) the BPWS will cooperate additional fact-finding as may be requested with reference to available manpower and press of mandated program needs.

Suggestions or recommendations to the Commission

(a) The Commission's charge is considered to embrace a multiplicity of problems, some of which are not directly or statutorily within the Department's purview.
(b) These problems are recognized as all-inconclusive conerns to the Commission and the water-consuming public in the study area.
(c) The Department feels it would presume on the Commission's charge by offering suggestions or recommendations at this time.
(d) The Department may, or may not, comment on the Commission's findings, conditions and recommendations when they are issued.
(e) The Department's position is that the Commission's activities are promising, will be a substantial contribution for public water supply systems in the State of New York, and that its BPWS will cooperate in every feasible way with the execution of the Commission's assignment.

Thank you for your attention.

OFFICE OF PLANNING SERVICES

OCTOBER 27, 1971
Albany, New York

OFFICE OF PLANNING SERVICES

CONFERENCE

OPENING REMARKS

ACTING CHAIRMAN FORSTER: I call this meeting to order. Mr. Conway asked us to express his deep regret to you that he could not remain for the afternoon session.

We will hear from Mr. Charles Crangle, the Assistant Director of the Office of Planning Services.

PRESENTATION

MR. CHARLES L. CRANGLE, Assistant Director of the Office of Planning Services:

In setting up the Office of Planning Services last year, the Legislature called attention to the need for the protection and development of human, natural and man-made resources of the State and the further need for cooperation and collaboration among all agencies and levels of government and between the private and public sectors. The Legislature further recognized the need for the ready availability to these units of government of technical services, assistance and information necessary for their planning and development activities, together with an anticipation of and plans for future development needs and opportunities. It was stipulated that these requirements were to be fulfilled through the new Office of Planning Services.

We are, therefore, interested for a number of reasons in the mission of this Temporary State Commission and in its resolution of the water supply needs of southeastern New York.

Specifically, to depart from the legal terminology, we are concerned with the overall future growth and development of the State, and with regional, county, and local planning

and the resultant land use controls. Our predecessor agency, the Office of Planning Coordination, completed the first version of a New York State Development Plan last year. Input into this Plan was obtained from all the various State agencies, and from the local political jurisdictions which had undertaken planning programs and come up with recommendations. The Plan represents a first attempt to synthesize these various proposals in one document and to present them in map form for further study and consideration. I should emphasize that the plan presented was not considered to be a finished document and further input for progressive refinement of the plan was solicited. The mere act of putting this material together in one publication, has, however, made it possible to recognize the proportionate needs for service of various areas of the State of New York and to undertake further functional planning to meet these needs. Water supply is a very basic need in all of the counties within the purview of this Temporary State Commission, and I shall return to this point later in my discussion.

New York State has provided, for many years, technical assistance to local governments in the preparation of community plans and land use controls. This assistance is rendered by staff of the Office of Planning Services which works closely with local governments on these matters. For well over a decade, federal and state funds have been available through the Comprehensive Planning Assistance Program to financially assist in the preparation of comprehensive municipal plans. Federal requirements have increasingly stressed the need for recognizing in such municipal planning the whole problem of municipal service, including water, and such other allied fields as the total environmental impact of the plans proposed.

As part of its responsibility to provide overall information and data necessary for the furtherance of the local planning process, the Office of Planning Services prepares and maintains central population and economic projections covering the entire State. It is my understanding that these data have already been made available to the staff of this Commission.

I should also comment that we have worked over the years with the professional staff of the State Health Department and former Conservation Department on various aspects of their water studies, all now centered in the new Department of Environmental Conservation. We continue to review and comment on a variety of state and interstate studies in the water supply field for the new agency.

Our basic concern, of course, lies in the fact that two-thirds of the population of the State of New York is centered in the area for which water supply is being studied by your

Commission. These counties represent an area of intense development, one in which further development is progressively occurring, and in which land use demand is already tight; all of these factors pointing toward a present and future water demand way above and beyond that likely to be experienced in our lifetimes anywhere else in the State. I should remind you, that this same area has severe corollary problems in the fields of sewage disposal and solid waste disposal.

The water supply in southeastern New York is a critical one for the suburban fringes as well as for the intense urban areas. This is because the small lakes, ponds and streams that have historically been used as sources of local supplies are either already polluted or are in danger of such pollution through seepage and leaching. The water table itself has been affected by such seepage as well as by overly heavy drawdown.

It would seem important for the Commission to consider that a number of larger water bodies, particularly in Westchester and in the Catskills, are reserved for water supply purposes only, meaning that they are off limits for any type of recreational use. In an area of ever-increasing population density, the need for water oriented recreation becomes increasingly important. A basic weakness of the Catskills for recreation at present is the fact that so few water bodies of any size are available for public use. It would appear that attention might be given to the question of opening up these reservoirs for at least limited recreation which need not conflict, according to water supply engineers, with the use of this water ultimately for drinking purposes.

While there has been considerable recognition of the water supply problem in the major urban area of New York City and environs, I believe that the immensity of the problem has not yet struck what we might term these suburan areas of Metropolitan New York. Witness to this is the zoning pattern adopted by many of the component communities. It is my observation that if these communities were developed at the actual densities permitted by their current zoning, the resultant water demands would be so astronomical as to defy solution. The need for holding appreciable amounts of open space within the area of the lower Hudson is evident, not only in order to satisfy the recreational demands of the nation's major metropolis, but also in order to relieve to a degree the future water supply demand on the area. To my knowledge, only Suffolk county has, so far, recognized this problem.

A number of reports and studies prepared by this office and its predecessor agency will be of interest to this Commission and its staff. I have already mentioned the first version of the State Depvelopment Plan, which outlines a settlement pattern and a land use pattern desirable for achievement in the State by 1990–now less than 20 years away. You will note, too, that the State Development Plan devotes considerable attention in its consideration of goals and objectives to the area of water supply.

The economic outlook report prepared in 1970 provides projections of employment, economic activity and industrial growth to 1980 and will represent a further input in determining water supply demand within the Hudson Valley.

Our Demographic Study data have now been updated to include the 1970 census and the projections by county have now been computed by five-year intervals to the year 2000. Further refinement of these data to minor civil divisions, where desired, is possible.

The LUNR map data, developed for our office by Cornell University, will be useful to the Commission in demonstrating the current development pattern for your entire area of concern.

I should also call attention to the study completed last year jointly by our office and the Division of Water Resources in the Department of Environmental Conservation covering the water resources of Long Island. This study demonstrates the already critical needs of Nassau County in the water supply area and indicates the possibility of adequate supplies for Suffolk County as long as the current zoning pattern holds.

In addition to the Office of Planning Services studies that I have mentioned, there are several other regional planning agencies, both public and private, whose study data should be of use to this Commission in its undertaking. The Tri-State Regional Planning Commission, for example, has done extensive study work in the Metropolitan New York area covering portions of New Jersey and Connecticut as well as New York. Tri-State's area of study in New York State is approximately that of this Commission, and Tri-State has prepared a composite zoning overlay for its entire region which would indicate potential population densities and therefore potential water demand. Tri-State also has an inventory of all current water systems and suppliers, both public and private, and this should also be of value to the Commission staff in its work.

The New York Regional Plan Association, a private enterprise, has perhaps the longest consistent history of planning in the New York Metropolitan Area. RPA has a recently completed comprehensive regional plan covering the area north to and including Ulster and Dutchess counties, and this development plan should certainly be considered as an input to the Commission's work. Particular note should be taken of the RPA proposals for open space.

The Mid-Hudson Patterns for Progress is another private planning agency concentrating on the Mid-Hudson counties with a primary orientation to development.

This agency prepared last year, in conjunction with RPA, a development plan for the Mid-Hudson detailing proposed new industrial and commercial areas as well as areas for more intense housing development. Six UDC projects are now underway as a result of this study.

The Tocks Island Regional Advisory Council is oriented toward the Delaware River Basin and most specifically the Tocks Island recreation development. The council, however, did studies in the field of water supply demand, sewage, solid waste and land use controls for Orange and Sullivan Counties. The focus of these studies was on how the park and reservoir development might relate to the surrounding area, and the study indicated a considerable development of second homes in these two counties might be anticipated.

The foregoing outlines in some detail the interest of the Office of Planning Services in the area of your undertaking, some of the inputs which we may be able to offer to your study, and identifies the basic studies and reports which we believe the staff of the Commission will wish to investigate.

I would like to close with the following summary points:

1. The water need for this area is a regional one and must be approached as such. No small scale solutions aimed at meeting part of the problem will do for the long run.
2. The problem of water supply for Metropolitan New York is in many respects interstate in nature since the metropolitan area has for many years spilled over into portions of New Jersey and Connecticut and the water needs of these areas are interrelated to those of New York State.
3. As a major contributor to any solution, emphasis on cleaning up the Hudson River would seem to be indicated.
4. The present zoning pattern in communities along the Hudson will call for major increased water demands within the next decade. Perhaps we must face up to the fact that this amount of growth simply cannot be accommodated in terms of water service.
5. The future of economic development as well as residential development within southeastern New York lies basically in our ability to provide the needed water.
6. Water supply has a recreational aspect in addition to the service question, and this recreational aspect will be the subject of much more concern as time and development progress.

DISCUSSION

ACTING CHAIRMAN FORSTER: Thank you very much, Mr. Crangle, for your thoughtful and comprehensive presentation.

MR. SCHICKLER: I got the impression that you feel that the future population will be governed by the amount of water supply available, not by zoning, am I correct on that?

MR. CRANGLE: I think that the present zoning is overly optimistic of the ability to provide water, and this may encourage development in areas with limited supply of water.

MR. SCHICKLER: There are many factors that the Commission must examine, we cannot limit ourselves to zoning. There is going to be a certain amount of people and wherever they live in the Commission Service area, they will need an adequate water supply.

MR. CRANGLE: I think that careful consideration of water use and availability should be part of any development program, including zoning. Is it better to have industrial development consuming 'X' millions of gallons or is it better to use this water for apartment housing? Maybe you can't have both. Local governments should consider the full question of leaving some open space, which would not only relieve the demand on water but would also make living a lot better in those areas.

MR. SCHICKLER: I don't think we are going to limit the population and consequently the water supply by zoning. In other words, we can't keep people out.

MR. CRANGLE: If you look at their current zoning, it would call for a very intense development which in turn would mean tremendous amounts of water. I think it would be very interesting if the Commission staff followed through on the Tri-State zoning composite and tried to see how much this would amount to in terms of, first, population and then, in terms of water demand.

MR. HENNIGAN: Can you tell us something about what is happening on demographic projections? Lately I have been reading of a change of direction.

MR. CRANGLE: I'm no demographic authority. It seems very evident that the population growth rate has started to decline. This will have some serious effects in terms of development of the state.

Just to give one example—schools. We have gone along for years believing we couldn't build enough schools, but it is entirely conceivable that in a few more years we will have tenantless schools. Unfortunately, we will probably have them unbalanced, shortages in some sections, surplus somewhere else.

ACTING CHAIRMAN FORSTER: Mr. Crangle, would you comment more on your suggestion for the increased recreation or use of the city impoundments in Westchester, Putnam, Ulster, and Delaware Counties?

MR. CRANGLE: I would be happy to, but I should say that this is a sort of a personal feeling of mine. I can't claim that this mirrors an opinion of the office in any sense. But it does seem to me, that since we continuously face the problem of limited availability of recreational water in the Catskills, which really is recreationally oriented, that some consideration could be given to some recreational use of existing water supply reservoirs. There is practically no available water body to put a boat on or to swim in, and one reason for this is the current restriction on water supply reservoir usage.

ACTING CHAIRMAN FORSTER: Let me correct one impression you have. On all impoundments of the Department of Water Resources in the Catskills, and in the east side of the Hudson, some boating and and fishing is permitted, but not swimming.

MR. CRANGLE: Yes, that's what I understand.

ACTING CHAIRMAN FORSTER: Have you consulted the Public Health people in terms of permitting swimming in the water supply reservoirs?

MR. CRANGLE: I have talked to several water supply engineers, who feel that if the water is treated, swimming would not be a serious problem.

ACTING CHAIRMAN FORSTER: You will admit that there is probably some argument in that area from Public Health sources?

MR. CRANGLE: I am not an expert on it, but I rather assume that the trend has begun to go the other way—that they feel that if treatment is sufficient that they could use them safely.

ACTING CHAIRMAN FORSTER: But you would think that we must be guided by what Public Health experts tell us in this area?

MR. CRANGLE: Well, I'm sure you would be. I simply wanted to point out the fact that recreation ties in so definitely from the standpoint of open space, and from the standpoint of providing recreation, to your consideration of water service. I would hope

that the Commission's consideration would not be limited. That you would recognize these other aspects.

MR. HENNIGAN: What's the Tri-State Planning Agency?

MR. CRANGLE: Well, it was created by the governors of the three states about 1964, and first called the Tri-State Transportation Commission and you may know it by that title.

However, from the very first the intention was that it be an overall regional planning agency. The first emphasis was on transportation because of the vast needs in the New York Metropolitan area—the need of melting public transit and automotive transit together in some reasonable fashion.

Last year, the Federal government insisted that if it were to be continued in its funding, its title had to change. There was legislation in the three states and the title was changed to the Regional Planning Agency.

MR. HENNIGAN: Does the agency have substantive authority or is it just an advisory group?

MR. CRANGLE: Well, it has a good deal of Federal review authority over projects. It can recommend to the Federal agencies the funding or non-funding of projects.

MR. HENNIGAN: That's a clearance authority for Federal grants.

MR. CRANGLE: That's right, and it does have considerable effect, although as you recognize, a Federal agency can overrule that recommendation.

MR. HENNIGAN: Do they take in the City of New York and the eight counties that we are interested in?

MR. CRANGLE: I think the boundaries are the same. It's the only publicly supported regional planning agency. I mentioned RPA, the Regional Plan Association, which is a privately funded agency.

MR. HENNIGAN: Is RPA, a commerce and industry-type organization?

MR. CRANGLE: No, indeed it is not. It has always deliberately chosen to remain private so that it would feel no allegiance or tie to any particular governmental agency. It has a highly reputable staff and a board, but these are all private individuals. Its money is raised by contributions from various foundations and societies; and it originally prepared, quite a number of years ago, a conceptual plan for the New York Metropolitan area to indicate how it felt development should best take place. It pointed out even then such real problems as servicing Long Island with water, if Long Island were to grow to the point where it could no longer serve itself. A year or so ago, they did their second regional plan. Interestingly enough, if you are concerned with this, there will be a television series this winter, which will detail the various planning proposals in the New York Metropolitan area and will cover RPA's plan and the Tri-State plan.

MR. MERKENS: You mentioned LUNR. Could you explain what LUNR is and how you feel we could make use of it?

MR. CRANGLE: Yes. LUNR is a land inventory; it's aerial photography with a high degree of refinement, which has been fed into a computer. The output is a record of the actual land use of the entire State of New York. I thought this would be important to the Commission's consideration of land use in the Hudson Valley. It identifies such things as highly viable farm land in Ulster County and prints this out in map form for the record. It is an inventory with a mechanical device for retrieval of precise information very rapidly. If you haven't looked into it, we would be very happy to have any of your staff come over and give you a digest of it. I have used it for putting forth on paper precise kinds of information and found that it is almost unbeatable because you can get it fast. No more clerks checking and checking. It is for the entire state, and it was flown in 1969.It is very accurate.

MR. HENNIGAN: We have county planning agencies in every county. Are they tied in some way with this Tri-State agency? Is there any regional grouping of say the county agencies in New York, or is everybody kind of on their own?

MR. CRANGLE: One of the ties, of course, are Federal requirements for review of projects, and Tri-State must consult with the counties. There is a continual tie between the planning done in all of these counties, most of which, we assist financially, and with Tri-State on which we are represented. And, of course, as the Office of Planning Services, we are very intent on the fact that they would be tied together.

MR. HENNIGAN: You mentioned also that Suffolk County was the only county in which the present zoning pattern seemed to be reasonable in terms of demand on resources:

MR. CRANGLE: Well, Suffolk County has recognized this fact. I think Nassau County developed before anything was done.

MR. SCHICKLER: There is a study going on now. Last month the county legislature commissioned a study to determine the population as limited by the water supply.

MR. HENNIGAN: The Suffolk County study said that the future growth and development of Suffolk County was predicated on the basic resources in the area—the major one being water.

MR. SCHICKLER: And now they are going to determine what that figure is. They now have, I think, appropriated the money for this study.

MR. HENNIGAN: What you are really saying, if I understood you, is that if the land was used for the purpose for which it is now zoned, such as residential with such and such a density, you would have a lot more people than now live there. A lot more demand on basic services, including water.

MR. CRANGLE: Yes, including water. To a really remarkable degree, you have to really look at some of those villages and towns to realize how unrealistic some of that zoning is.

MR. HENNIGAN: Well, don't you think a lot of this is kind of wishful thinking. I mean a lot of the population statistics are.

MR. CRANGLE: Of course it is. They are tending to go the same way, but they are looking for progress in terms of growth and development. As you well know, there are miles along the St. Lawrence that are wishfully zoned for industry, but industry is not likely to come in that quantity. When you zone that amount of land for intense development in the lower Hudson, there is a much greater likelihood that it can happen because the demand is there. The growth just since the war has been absolutely amazing. So you know, it is a real demand on the water resources, and if you assume that water is going to be a limited commodity in this particular part of the state, and that is my fundamental assumption, it represents a problem.

MR. HENNIGAN: This population thing both interests me and concerns me to a great extent. We have the redistribution situation, as in New York City; Manhattan is dropping, Queens is building, and Staten Island is building, even though the overall population might become static within the City of New York. There is also new growth and expansion.

If we look at population projections that were made, say, in '67 or '68, they are fairly optimistic. After the 1970 census, people started to wind these projections back down. So you are tossing a coin when you talk about what the population is going to be, and the further you get into the future the less sure you become. Your certitude gets very shaky, as you march into the future.

MR. CRANGLE: Well, I think you are quite right on that.

CONCLUSION

ACTING CHAIRMAN FORSTER: We thank you Mr. Crangle, for your presence and your thoughtful presentation. The meeting stands adjourned.

APPENDIX A

ATTENDANCE

SOUTHEAST WATER SUPPLY COMMISSION

Commissioners
Herman Forster, Acting Chairman
William N. Schickler

Staff
Robert D. Hennigan, P.E., Executive Director
Harold Breon, Water Resources Engineer
Jeffrey Brewer, Research Engineer
David Duffy, Administrative Assistant
Steve Lackey, Assistant Director Engineering Studies & Analysis
Paul W. Merkens, Director Engineering Studies & Analysis
Robert Redmond, Staff Attorney
Leslie Van Derzee, Research Associate
Irene Baker, Public Relations

OFFICE OF PLANNING SERVICES

Charles L. Crangle, Assistant Director

Observer
Edward Karath, Department of Environmental Conservation

PUBLIC SERVICE COMMISSION

DECEMBER 1, 1971
New York, New York

PUBLIC SERVICE COMMISSION

CONFERENCE

OPENING REMARKS

CHAIRMAN CONWAY: We are very pleased to have with us Mr. Robert J. Mulligan, Director of the Water Division, and John F. Guastella, the Deputy Director of the Water Division of the Public Service Commission.

The presentation this morning and the one to follow with the Atomic and Space Development Agency will complete the Commission's meetings with State Agencies that are related, directly or indirectly, with the water supply problems of New York State.

The work of this Commission is to determine what can and should be done as far as meeting the water supply needs of this southeastern area. It represents 65 to 70 per cent of the State's population. Of course, we've had a great deal of assistance and cooperation from the various state agencies involved, especially in this input phase of our study. So, we very much appreciate your being here.

PRESENTATION

MR. ROBERT J. MULLIGAN, Director of the Water Division, New York Public Service Commission: I would like to make our statement and then answer any questions that you may have.

Ladies and gentlemen, I am happy to participate in this meeting. My presentation is intended to provide information concerning the functions of the Public Service Commission which may be useful to your Commission in its studies concerning water supply needs in

southeastern New York. To avoid confusion, I will refer to the Public Service Commission as "P.S.C." and your Temporary State Commission as "Commission."

Under Public Service Law, the P.S.C. has jurisdiction over the rates of all private or investor-owned waterworks corporations; and over the service provided by those waterwork corporations with a property value in excess of $30,000. The P.S.C. does not, by law, have jurisdiction over any water system operated by a city, town, village, water district, water authority or any other municipality whose affairs are managed by elected or appointed officers. In keeping with the purpose of the Commission, I have concentrated my presentation, for the most part, on the aspects of regulation of the service provided by waterworks corporations.

Stated in broad terms, the law mandates that every waterworks corporation shall furnish and provide such service, instrumentalities and facilities as shall be safe and adequate. As you can see, "safe and adequate" is so general a term that it enables the P.S.C. to engage in virtually any kind of study or activity with regard to water service. As Director of the P.S.C.'s Water Division, and on behalf of Chairman Swidler and the other members of the P.S.C., I can say that we are very much convinced that long-range planning is essential to insure that present and future users of water have a safe and adequate supply. Furthermore, while the P.S.C.'s jurisdiction is limited to investor-owned waterworks corporations, it is apparent that when a supply of water within the franchise area of a particular water system becomes inadequate, then provisions must be made to extend beyond that franchise area to insure that an adequate supply of water is available. Therefore, I believe that the aims of the Commission are quite important and necessary at this time.

Having had experience in the regulation of waterworks corporations with respect to the problems of supply, I know that your task is difficult. Although most people will agree that it is in the best interest of society that everyone should have access and equal rights to a life sustaining commodity (water), major problems and conflicts will arise unless considerations are given to questions such as: What is an adequate water supply? How long will water supplies remain adequate? Who pays for the cost of furnishing the water? What is a fair rate for the water? How should the costs be allocated to different sectors? What environmental factors must be considered? These are some of the questions which the P.S.C. has been answering over the years in relation to the companies under our jurisdiction. At this point, I will explain the powers and operations of the P.S.C. and the Water Division which enable us to answer those and other questions.

The P.S.C. has the power, on its own motion, to examine and investigate the methods employed by waterworks corporations in delivering and supplying water. It has the right of access to all the physical plant of water systems in order to investigate the adequacy of service. It has the power to prescribe rules and regulations governing the acts and practices

to be employed by waterworks corporations. It also has the power, on its own motion, to institute formal proceedings and hold public hearings as to service provided by waterworks corporations. It can issue orders and directives to compel waterworks corporations to install facilities or otherwise add to or change its methods of operation to resolve service problems. Of course, since the P.S.C. is a quasi-judicial body, all waterworks corporations have the right of judicial review of any P.S.C. decision under Article 78, of the Civil Practices Law.

The Water Division is the staff of the P.S.C. which in keeping with the policies of the P.S.C., performs the day-to-day task of regulating waterworks corporations. The waterworks corporations under our jurisdiction can be placed into two categories: namely, large and small companies. Large companies are Classes A and B companies with revenues exceeding $100,000. There are twelve large water companies, ten of which are located in the southeastern part of the State. The reason that we can only estimate the number of small companies is that effective July 1, 1971, an amendment to Public Service Law, Section 2, Subdivision 27, expanded the jurisdiction of the P.S.C. to include the regulation of rates (not service) of waterworks corporations having a property value of $30,000 or less. (Property value is defined as the construction cost of waterworks property less accrued depreciation.) Prior to that date, the P.S.C. had jurisdiction over 137 waterworks corporations having a property value in excess of $30,000 with respect to both rates and service. The estimated number of small water companies is subject to variation because while we have obtained names of companies from various Health Department records, Department of Environmental Conservation records, and our own files, some of these companies may never have developed, others may have been taken over by a municipal water system or water district, and some may have been merged with other water systems.

Parenthetically, I should mention that we are recommending further amendments to the Public Service Law which will also give the P.S.C. jurisdiction over service provided by all investor-owned waterworks corporations, regardless of size.

I have brought with me, for your information, a county map of New York State which shows the estimated number of companies under P.S.C. jurisdiction which are located in the southeastern counties of the State. Again, I would point out that the numbers represent possible names of companies subject to jurisdiction. The actual number which will come under jurisdiction will no doubt vary.

Categorizing the water companies as large or small is, I believe, an important consideration for the Commission's studies. The small companies will likely not be able to participate in the long-range planning on the scale, or within the scope, of your goals since they serve relatively few customers. I would estimate that the number of customers serviced by these companies range from 5 to 1,000. Some of the companies may actually represent

individuals who extended water service to a few neighbors. However, the majority of small companies reflect the growth of real estate developments which had to install water systems because no other central source of water was available in the area of the development. It is reasonable to assume that it would be virtually impossible for these companies to connect to a large reservoir, transmission line or aqueduct because of geographic location and/or a lack of available funds to support such a connection. There are also some small water companies whose supply is adequate to serve existing customers and there is no room for growth in their service or franchise area.

In general, we find that small companies do not plan very far into the future for long range supply. Their needs are related to serving existing customers by maintaining existing water supplies. Any increase in demand or addition of customers is offset by the installation of relatively low yield wells, pumps, or storage facilities.

Because long-range planning is not readily applied to small water companies, my comments regarding reports on data which could be useful to the Commission pertains to the large water companies under our jurisdiction. I have had a table prepared showing the names and locations of the large water companies in the southeastern part of the State, along with the number of customers, water usage and source of supply. I have copies of this table for you today and I will be glad to provide any further information on these companies at your request. These companies all file annual reports with the P.S.C. giving a considerable amount of detailed information on revenues, cost of water plant, depreciation, operating costs, financial data, description and capacities of equipment and other statistics. These reports can also be made available to you.

The Water Division is now in the process of preparing a report to the P.S.C. on the long-range plans of water companies under jurisdiction. I don't expect that the report will be completed for some time. However, I can also make this report available to you when it is completed.

Studies are continuously being made concerning conservation of water and the metering of unmetered systems. In this context, a formal proceeding has recently been instituted by the P.S.C. regarding the metering of Jamaica Water Supply Company's entire system.

There are a number of engineering and economic studies which we perform concerning the reasonableness of rates. These studies provide information with which to determine not only the overall revenue requirement that is reasonable for a company to earn but also the rates which must be charged so that each customer pays his fair share for water. While it may be premature at this time for the Commission to consider how to spread the costs of any future water supply projects to the different beneficiaries of those projects, I thought you would like to know that there are various general principles which have been

established to avoid discriminatory rates favoring one customer, or group of customers, over others, and we would make available to you our expertise in this area if you so desired.

The Water Division has developed a working relationship with other State agencies which is useful to insure adequate service. For example, before a company installs a new well or serves in a new area, it must obtain permission from the Department of Environmental Conservations, Division of Water Resources. That State agency will not grant said permission unless there is an adequate groundwater supply in the area. It may also impose certain requirements such as metering an unmetered system of limiting the number of customers to be served by a given service. The Water Division receives advance notice of petitions before the Department of Environmental Conservation. We have been presenting testimony in cases wherein we feel that a petition should be denied or that restrictions be imposed before approval is granted on a petition.

The P.S.C. is also responsible for answering customer complaints as to poor service. Engineers from the Water Division make field investigations of service complaints to determine the adequacy of a water supply. This work is in addition to routine service investigations. Our investigations have led to directives to the companies requiring that additions or improvements be made to water systems and their operations. In some cases, formal proceedings are instituted and public hearings held to resolve service problems. There have also been instances wherein the P.S.C. has taken action in civil courts to force a reluctant company to obey orders requiring improvements to a water system.

In summarizing, I would recommend to the Commission that:

1) any determination as to long-range needs and available supplies be coordinated with the county, town, village and investor-owned water systems in order to promote cooperation between these systems for the ultimate benefit of the southeastern New York State area as a whole.

2) the Commission consult with the various state and local agencies responsible for water resources, planning, health, environmental impact and regulation before any comprehensive plan is adopted concerning the water supply needs of this area.

3) studies concerning the conservation of water be considered in any long-range plans. Specifically, the studies should be directed at the metering of unmetered systems and reducing lost and unaccounted-for water. Both of these conservation factors not only avoid needless waste but can put off the need for costly additional capital improvements, and

4) if the outcome of your studies result in a permanent organization charged with implementing long-range plans, officials from private and public water systems as well as from state agencies involved in water supply be represented on said organization. We have some tabulations that I would make available.

Thank you.

DISCUSSION

CHAIRMAN CONWAY: Thank you very much.

In regards to your suggestion of pushing towards universal water metering as a conservation measure; is this primarily in order to determine unaccounted for water or do you have studies or feelings, at least, that this will result in less water use by the consumer?

MR. MULLIGAN: We presented testimony in the spring of this year, before the Department of Environmental Conservation, as to the average annual use per customer.

The DEC was having hearings on an application that would make the water supply from additional sources in the Nassau County area not metered.

Of course, basically, most people if they have a choice do not want a meter. We have instances where an old couple with no children will take a meter. They can actually save a little bit of money by taking a meter. They use a minimum amount of water. Of the 104,000 domestic accounts, 100,000 are unmetered, so obviously most people have taken the unmetered account.

We have made some studies that show that consumption in Jamaica which is unmetered is fifty per cent greater than the consumption in adjacent Long Island communities that are metered. This is with the same type of customer, same size lots and the same climate. We recommend metering as a conservation measure, a savings of water, and also as an equitable allocation of the sources of water supply.

CHAIRMAN CONWAY: Your study, though, didn't go to my question. Could it have been a result of not having a metered system that they didn't realize how many leaks they had in the Jamaica System?

MR. MULLIGAN: Well, Jamaica had a study done back in the early 1950's and they developed that their unaccounted water was in the area of thirteen per cent. They have checked that periodically themselves. The Jamaica disbribution system is a well maintained system.

I wouldn't believe there would be any great difference in that unaccounted water supply. My personal opinion is that the difference would be in consumption by the customer.

There is a big difference in the amount used for lawn sprinkling in metered and unmetered areas. Eventually, you are going to put that sprinkler on if there is no economic

barrier in the amount of water that you use. Whereas, if it is metered, you are going to watch the consumption because you are going to be paying for it, based on the number of gallons that you use. So it is my opinion that the difference is in customers not being metered.

CHAIRMAN CONWAY: Has this study been reduced to writing and will it be available?

MR. MULLIGAN: Sure, we have put it in exhibits and we can certainly give you copies of the exhibits.

CHAIRMAN CONWAY: We would appreciate that. As you probably realize there are many issues before the Commission. This meter issue is a sensitive issue. There are studies that have been brought to the attention of the Commission that would tend to show the opposite.

MR. MULLIGAN: Well, we will give you the evidence which we presented in the Jamaica case which indicates that their average annual consumption was more. We will work up a computation and show you what are the averages in other private companies on Long Island.

CHAIRMAN CONWAY: Anything that you may have on this subject would be most helpful. Any evidence we can collect on metering will help. There was a study done in Orange County—I don't know how scientific it was, between Newburgh and Middletown. It tended to show just the opposite—consumption was relatively the same between Middletown which is essentially unmetered and Newburgh which is essentially metered.

MR. MULLIGAN: We will give you a comparison of the five private companies in Nassau County. The five metered companies are Sea Cliff, U and I, Citizens, Great Neck, and Long Island. And we will compare to Jamaica which serves partly in Nassau and is not metered.

We will also give it to you for the County of Queens and for Nassau, a total average comparison of residential consumption.

CHAIRMAN CONWAY: The consumption is substantially higher in Jamaica. Are the lawns smaller there?

MR. MULLIGAN: Well, I don't know for sure if the lawns are smaller. I don't think the lawns in Jamaica are smaller. I wouldn't think the lawns are any smaller than the lawns in Lynbrook (L.I. Water Co.) or the lawns in Sea Cliff.

The lawns in Citizens are another thing.

CHAIRMAN CONWAY: Yes, I was thinking of Great Neck.

MR. MULLIGAN: We will segregate Great Neck. You see, they bill the lawn-sprinkler accounts separately, so we will be able to segregate the lawn-sprinkler accounts. They are served by a separate water service that just serves the lawn-sprinkler in many homes. Then they also have regular domestic accounts which serve the house and also some lawn use.

MR. HENNIGAN: A separate connection?

MR. MULLIGAN: For the lawn-sprinkling service. Not every customer has it, but many of the larger homes have a separate service. We get the consumption off that service and give you an idea of how much water those people put out on their lawns.

CHAIRMAN CONWAY: Are they billed at a separate rate for that?

MR. MULLIGAN: No, they're billed at the same rate. They get billed at an annual minimum charge; the commodity cost is the same, but there is a certain minimum associated with that service, based on the demands which the service puts on the system.

So, they would pay a much higher minimum charge for the service.

CHAIRMAN CONWAY: Is there a certain amount of lawn required?

MR. MULLIGAN: No, that's the option of the customer. Obviously if you have a large lawn the people put in separate sprinklers, but it is strictly at the option of the customer. You can attempt to sprinkle it through a hose if you want to.

CHAIRMAN CONWAY: There has been a lot of testimony before this Commission to the extent that small privately owned companies and even large industrial companies should as rapidly as possible be acquired by counties, depending on what authority.

Suffolk County has made a lot of progress in the last few years and acquired many of the small private companies. Do you have any opinions on this?

MR. MULLIGAN: I don't; I guess it's a philosophical choice. Let me point something out here. The acquisition of a private company may not render great benefits to the customer.

There was a case pending where the Great Neck Water Authority was formed to take over the water supply of Citizens Water Supply Co. There was a hearing before the Department of Environmental Conservation which was the Water Resource Commission at that time. I think some of the testimony was to the effect that after acquiring the system, the water rates were to remian the same. It would have taken an investor-owned utility off the tax base, and shifted a significant portion of the tax elsewhere. The end result to the consumer would have been the same water rates.

I don't think this is the case of a big company. Some of the small companies are more interested in the real estate business than in doing a good job.

CHAIRMAN CONWAY: In the case of the big companies, you don't think the rates would be different then?

MR. MULLIGAN: The rates might not be different, Mr. Conway. I might take a moment to touch on this. The Town of Hempstead gets about three million dollars a year between Long Island Water and Jamaica Water and the utilities in the Merrick District.

I guess their philosophy may be–let's leave them on the tax rolls, unless there's going to be significant savings in the cost of water.

CHAIRMAN CONWAY: It was vehemently argued by the Commissioner in Nyack, Rockland County, that the Spring Valley Water Company rates were substantially higher.

MR. MULLIGAN: It always will be, Mr. Conway. As long as they pay taxes, there is no way in the world that they can have lower rates. Fifty per cent of the water revenues that come from Citizens Water Supply Company are taxes. They are the highest in the State. So if we take them off the tax rolls you can theoretically reduce the rates by fifty per cent, assuming you don't have to raise your real estate rate, which means you don't have to pay anything for the company.

Now, you have to float a bond issue for the amount that would reproduce a new system and then it may not be economically feasible.

CHAIRMAN CONWAY: Would you suggest that the differential is largely attributable to real estate taxes?

MR. MULLIGAN: Yes. For example, the Spring Valley Water Company which the gentleman form Nyack talked about, got a substantial increase; a million dollars in 1969. The taxes have now gone up $800,000 in one year. That whole increase has been eroded in one year, and they are about to make another increase of significant amount. So what has happened is that all the utilities become a giant tax collection system.

Do you want to take them off the tax rolls; and then reassess all the assessed valuation and make up the difference. If there was a significant decrease in the cost of water, it might be worth it, but if you are going to end up with pretty much the same water rates, it would not seem to be a logical decision.

CHAIRMAN CONWAY: That issue affects regionalization of public water supply in another way. New York City is the largest tax payer in Delaware County and some citizens up there expressed their concern to this Commission.

MR. MULLIGAN: The city makes payments in lieu of tax.

MR. HENNIGAN: The distinction that you made between large and small companies, isn't the question of public or private ownership.

MR. MULLIGAN: Right.

MR. HENNIGAN: Many of the people, as the Chairman has stated, have raised the issue. This particular issue was raised in many of the counties we've visited. In Suffolk County, for instance, I recall that one of the agencies recommended that approximately fifteen privately owned small companies be taken over by an authority as soon as possible. Also in Putnam County, there are fifty-eight small water companies. The total population of Putnam County was 36,000 people and I know that they don't serve everybody.

MR. MULLIGAN: No, and I would think the companies with fifteen or twenty customers, can ever be a going proposition. At one time, many developers thought about

private wells to serve new homes. I believe the FHA mandated public water supply, and that kind of started it. But, then most of the counties got on the bandwagon.

Now that the counties have taken the same approach, you have to have a public supply. If there is no public supply nearby, a man who is going to build a house may find it economically unfeasible.

CHAIRMAN CONWAY: I might add that according to the requirements twenty years ago much of Suffolk and some parts of Nassau couldn't be developed if you required public water supply. It wasn't economical.

MR. MULLIGAN: I guess our unfortunate problem in water is that we don't certificate—like in gas, electric and telephone—where we issue the initial certificates of public convenience and necessity.

In water we get in there after the baby is born. The towns have created the baby by issuing a franchise and by encouraging the real estate development. Then the Department of Environmental Conservation has allowed them to build a system and a source of supply.

MR. HENNIGAN: Do all these systems conform to the Transportation and Corporation Law?

MR. MULLIGAN: They do now, but prior to a few years ago, they were functioning as real estate developments, not as water corporations.

MR. HENNIGAN: In terms of public and private issues, a major issue on Long Island concerning this question is the fact that we have two large water companies in Queens mining a limited resource. This was brought out yesterday in our meeting with the Department of Environmental Conservation. Also there is the very intimate relationship on Long Island of waste water disposal and its effects. Investor-owned companies presently serve about forty per cent of Nassau County.

MR. HENNIGAN: Do you have any idea of the population served by private water companies in the southeast area?

MR. JOHN F. GUASTELLA: Deputy Director of Water Division, New York State Public Service Commission. About 1½ million population—not customers, population.

MR. MULLIGAN: I think the population in Nassau County alone is forty per cent of the total which must be 600,000 people. Jamaica has about 80,000 accounts and in the city there are probably 400,000 more.

CHAIRMAN CONWAY: That's not the entire area. Roughly ten to eleven per cent of the area is served by investor-owned companies.

MR. MULLIGAN: Nassau County has the largest concentration of investor-owned companies, both in size and population.

MR. HENNIGAN: When a municipality or public body takes over a private water company by condemnation negotiation, is it true that they ordinarily must pay substantially higher than the book value of rates that you have established?

MR. MULLIGAN: We set rates on original cost less depreciation basis. Condemnation is on reproduction cost—the same as a piece of property that you paid a thousand dollars for and now it's worth a hundred thousand; it's the same concept.

For example, when Suffolk took over East Hampton, the original cost of the facility was $200,000; and their acquisition cost was $600,000. So in other words, the consumer's rates are based on the investment of $200,000, but he's now going to support a bond issue of $600,000 to acquire that system. That's why in Great Neck we are going to end up with the same water rates. That is one of the important considerations.

MR. GUASTELLA: There is one other factor to be considered concerning investor-owned and separate municipality owned systems. We get many complaints on the different rules for extending mains, building procedures, hook-up practices, and tapping fees. It varies with each municipality having their own rules and regulations.

In the investor-owned, I think we can standardize most of these rules and regulations avoiding any discrimination to a customer and relating what a customer pays to hook up to it, to what it costs to serve the customer. This way, existing customers don't pay for new customers and new customers don't offset the cost to existing customers.

Just establishing all different rules and regulations on a standard basis thoughout the State becomes pretty important to a lot of the customers. We have had an awful lot of complaints although there are some exceptions.

MR. MULLIGAN: They ask us who they can see. The authority is not regulated by the Commission so we refer them usually to the authority itself.

MR. SCHICKLER: Actually, our practice is pretty much under the Public Service Commission.

MR. MULLIGAN: Because the authority acquired the big private companies in Suffolk County. But we do have, as John said, standards on metered service. These are on a state-wide basis and every private company must abide by those standards. Where it's public, naturally, the public has its own standards.

MR. HENNIGAN: Don't you have some authority over municipal systems? You mentioned you didn't have any authority but there is something in your law which says that municipal water corporations or municipal water systems should file an annual report.

MR. MULLIGAN: No, that's a requirement that few follow. Mount Vernon follows it. I don't know why, but every year we get Mount Vernon's Annual Report. Occasionally, we get one of the others, but most of the municipalities don't do it. We have never pressed them on it and I don't know why it's there. I don't know what we'd do with it if we got it.

CHAIRMAN CONWAY: You have no authority over them in order to require an Annual Report?

MR. MULLIGAN: No authority whatsovever, Mr. Conway. They don't file it, and we don't press them on it, to be honest with you.

MR. QUARTARARO: I have heard that in Dutchess County they had complaints about privately owned water companies that have refused some of their customers. That certainly is a consideration as far as the publicly owned companies are concerned.

MR. MULLIGAN: We do have some pretty bad public companies. We try to lean on them and prior to July 1, we had no jurisdiction.

We had this cut off value and many companies were arbitrary when they were below our statutory limits. We can't do anything. Now we've gotten in on rates, eventually we will get into service. We had no recourse. Actually it was Assemblyman Stevens from Putnam County whose legislation got us into this small water company business.

As I said, we have proposed legislation—you can't regulate rates and not service. We give the company an increase and the person calls and says, you know, he cut off my service. We tell him we can't help him—we have no jurisdiction over service. It's really sad

situation but when the law was written it was specific, it gave us authority to regulate rates. We hope to change that in this session of the Legislature.

We have had some very bad operators and we are a quasi-judicial body. We have to establish on public record what they are doing. We then issue orders and directives and all of which are subject to review by the courts.

CHAIRMAN CONWAY: How long will it be before you establish rates for these five hundred private companies?

MR. MULLIGAN: Actually, they are charging rates now, Mr. Conway.

CHAIRMAN CONWAY: Yes, I know, but I mean rates that you've looked at.

MR. MULLIGAN: In other words, they will have to file a tariff schedule with the rates they are charging.

CHAIRMAN CONWAY: Have those tariff schedules all been filed?

MR. MULLIGAN: No.

CHAIRMAN CONWAY: How much time have you given these companies?

MR. MULLIGAN: It's kind of difficult to work with these companies; we just contact them and tell them to file them. To be honest with you, in many cases we type up the tariff schedule. Then we tell them they have to file a tariff schedule, which they eventually will do. Sometimes it's like pulling teeth to get them to file the tariff schedule, but none of them can change their rates now.

CHAIRMAN CONWAY: Without your approval.

MR. MULLIGAN: We have had some complaints about rates on some small companies up in Putnam County and we've investigated it.

People really don't understand what rates are based on; so it's kind of an educational process to the consumer. We will eventually hope to give these people the tariff schedule containing their rates, but none of them can change their rates.

CHAIRMAN CONWAY: I think that's probably one of the most imporant aspects of the law.

MR. MULLIGAN: We have to approve any change in rates. We've got a couple from the small companies but not too many to date. They're all aware that they are under jurisdiction. They have all received a letter, a communication advising them that they are under our jurisdiction as far as rates are concerned. But, we've had trouble finding them. We don't know where they are, so we go to the Health Department and the D.E.C. We have found some systems that never even went to D.E.C., they just went out and drilled a well, and built a system and never acquired the approval of D.E.C. That's their source of supply, or remaining source of supply.

So it's been quite a job trying to locate all these companies; they're all over the State, with the exception of Niagara County.

MR. GUASTELLA: There are over 550 names.

MR. MULLIGAN: Potential companies—that's the figure we have give you—the potential figures are the figures that show on that map of systems that we have been advised are operating private systems. We have gotten responses from 250 or 350 of those.

Some of them have written back. There are certain legal questions; some of them are associations who get together and drill a well and our counsel now is determining what jurisdiction we have over an association that has no charge for water or where there is a charge for water. But, something like that is never going to be cruicial—you would never be concerned with it.

MR. O'BRIEN: On the subject of the Spring Valley Water Company on the diversion of water from Lake DeForest between Nyack and the Hackensack system, was that a decision of your Commission?

MR. MULLIGAN: No, that was D.E.C.'s decision.

MR. O'BRIEN: Would you spell out what the allocation is for us?

MR. MULLIGAN: I believe the allocation is that the Spring Valley System takes up to twenty million gallons a day from DeForest Reservoir and the rest of it must pass downstream.

As I said, I'm not that familiar with the decision—it went back to 1954, but I think the maximum demand, the maximum supply available to Spring Valley was twenty million gallons.

MR. O'BRIEN: Today, who would make such a decision?

MR. MULLIGAN: It would still be the Department of Environmental Conservation, because they control the ground and the surface water resources of the State. That was their original decision, riparian rights that flow to Nyack and flow downstream to Hackensack.

MR. O'BRIEN: I understand that it was based on the theory of the Delaware River Basin Supreme Court case.

MR. MULLIGAN: I don't know, it was long before my time. I guess Mr. Vopelak who was here yesterday would be the expert on it.

Mr. John Thompson who is the Executive Engineer was the Hearing Examiner in that case. As I say it goes back to 1954 when they first gave them the plans of construction as to how the water would be regulated downstream. It was an extensive case file in hearings, and the New Jersey Commission, I believe, also approved the allocation and gave certain figures of allocation costs, too.

MR. O'BRIEN: Well, I was thinking, of the similarities between this case and the Delaware River Basin decision. There has been a change in New York City vs. Delaware, Pennsylvania, and New Jersey case. I think the whole situation has changed as much here but on a smaller scale. Everybody, including the news reporters say we should go back to the Supreme Court on the Delaware Decision. That was what I was trying to get at.

MR. MULLIGAN: I would think the Spring Valley Company probably could petition for D.E.C. for modification.

MR. O'BRIEN: Not the Spring Valley Comapny, because it is owned by the New Jersey-Hackensack Water Company.

MR. MULLIGAN: Isn't the allocation a matter of litigation now in Nyack?

MR. O'BRIEN: No, it has nothing to do with allocation.

MR. MULLIGAN: There is some kind of litigation on that.

CHAIRMAN CONWAY: Do you have it broken out among the water companies which are under your jurisdiction–which ones are essentially distributing companies and which are what I would call vertical producers and distributors? For example New Rochelle Water Company is to a great extent a distributor system.

MR. MULLIGAN: Also Port Chester provides water for Greenwich. New Rochelle and Port Chester would basically be a distribution system. I was thinking Nassau County being all production, versus Westchest County, they are basically distribution systems.

CHAIRMAN CONWAY: And those are the only two significant companies?

MR. MULLIGAN: Right. Of the big companies, they are the only two that are on production. We have a little company which serves the Village of Sloatsburg. That's just a production company and the only one we have with a lake.

But, basically, most of the other companies, large and small, are involved in production and distribution, except for New Rochelle and Port Chester. Port Chester is strictly a distributorship–it buys all its water from Greenwich. New Rochelle does have its own little source of water which has, I guess, a capacity of a million or two million gallons. They get Delaware water through Westchester County Water Works, and they have their own connections to the Catskill and Croton Aqueducts so they use all three aqueducts.

MR. HENNIGAN: What's your definition of "large?"

MR. MULLIGAN: A hundred thousand in revenue, Mr. Hennigan. We have class A and B water companies, and generally we classify the large companies of a hundred–Class B, is a hundred to two hundred and fifty thousand, I believe and Class A would be the other.

There are only two more upstate; one in Owego which is near Binghamton and the Wanakah Water Company which serves south of Buffalo. Those are the only two large companies in the upstate area which would be outside the area of your study.

MR. HENNIGAN: How come you include Sterling Storage Water Corporation?

MR. MULLIGAN: Because of revenues.

MR. HENNIGAN: Revenues? Are they making that much money? They have only a few customers.

MR. MULLIGAN: No, it's industrial, they have an IBM facility there.

CHAIRMAN CONWAY: That is investor-owned.

MR. MULLIGAN: There are three or four research and development companies in the area and very little residential use. So under that revenue test, they would be classified as a large company. They call for certain accounting procedures on their part when they become a large company—a more detailed accounting of their operations, and that's why we rate them as a large company.

CHAIRMAN CONWAY: What per cent of return do you allow?

MR. MULLIGAN: The most recent was the Jamaica Water Company who we allowed 7.25 with a 14 per cent return on equity. A little high in equity, and there are reasons why that was high. The Jamaica decision was a little high because of the mandated meter program which would involve a tremendous amount of per capita investment on their part. Also, they are under mandate to flouridate, now that the city is flouridated, and now they have been directed to flouridate their Queens County wells. So the Commission, because of these two factors, gave them a pretty good return on equity. The equity return has run around 12 or 12½ per cent.

CHAIRMAN CONWAY: Is that on capital?

MR. MULLIGAN: On book equity capital.

MR. HENNIGAN: Could you tell my why private investor-owned companies are going out of business in New York State? Is there any particular reason for that?

MR. MULLIGAN: It's the philosophy that Mr. Conway stated. In Suffolk County I think one reason was that the people who owned it didn't want to stay in the water business.

If there was another management—and this is my opinion—if there was different management in Suffolk County in 1940, maybe today you might not have a Suffolk County Water Company.

I don't know if Mr. Schickler would agree with that, but the philosophy of the U & I Corporation at that time was to encourage public acquisition by giving lousy service. It happened in Suffolk County, Buffalo and it happened in Syracuse. If Long Island Water hadn't sold its franchise to Jamaica Water maybe today we would not be talking about Suffolk County Water Company or the old companies as they were. But the big companies encouraged acquisition.

CHAIRMAN CONWAY: U & I wanted to get out of water for years.

MR. MULLIGAN: U & I was almost bankrupt in 1948. Now, today, it's a tremendous company with 37 million dollars in assets. Most of it is condemnation proceeds by disgruntled towns and disgruntled counties trying to hold force because of this and service problems. It's true, we are always one step behind.

If you have a service problem and you recommend improvements, they make certain improvements, they caught us all the way down the line and then we catch up and then another problem develops. So it kind of developed consumer unrest.

CHAIRMAN CONWAY: That was a rather unique situation. It was only U & I really.

MR. MULLIGAN: Only U & I. For example we had troubles in Merrick. Unfortunately Merrick had service cases on adequacy of water service. As I said Merrick is a good operation, a well-run service.

MR. SCHICKLER: The management that was in there previously, isn't there.

MR. MULLIGAN: Well, I think Rosenthal was still in when we had the Merrick problems. It started in 1962 and he isn't in that company any more.

CHAIRMAN CONWAY: This is U & I Merrick?

MR. SCHICKLER: Right.

MR. MULLIGAN: But they have certain advantages I think, under the tax laws to always retain one utility property. In other words, they don't take capital gains on these condemnation proceedings because of the re-investment concept that they would always be

investing these funds. So they have a tremendous capital gains tax. But if you have no utility business, I think you kind of lose your potential for reinvestment in utility properties.

I think we'll always probably see one utility property. They would always continue to run one utility property. It probably will be Merrick. I think there are negotiations to take over Woodhaven now. So I think we will then maybe just have Merrick. They've been talking for many years since 1915, I think, about taking over the Woodhaven system. That was many, many years ago.

CHAIRMAN CONWAY: U & I had problems in 1940. That's why you have to keep the company.

MR. MULLIGAN: You probably know more about that than I do. I've been told by our counsel of attorneys they will always probably keep one utility property.

CHAIRMAN CONWAY: Because if they sell out–and are not in operation, they become an investment company under the regulation of the SEC and you have trouble administratively. That's something you don't want to happen.

MR. MULLIGAN: Yes, because they are not an investment company. Technically they are an operating company with non-utility assets. They are kind of a separate breed of cat.

No, I think it would be unfair to compare Jamaica with Long Island or Citizens and the other companies with Spring Valley or New Rochelle.

I don't consider U & I a service utility.

MR. BUERLE: Just one little question. It really has to do with trends. More and more development would mean, I would think, small water companies coming into existence. At the same time there must be mergers among these small companies. Is this the case?

MR. MULLIGAN: There are very few mergers, Mr. Buerle, because they are physically disconnected. I can't think of a merger. We have had a couple of little companies up in Dutchess County that merged because of the proximity of their locations, but most times they are not physically close enough to merge to form one integrated company.

As an economic thing there haven't been any substantial mergers. In Suffolk County, the mergers have been through the Suffolk County Water Authority. I doubt if any of those comapanies would have formed any sort of holding company or merged–even the

ones that were close in proximity. For example, Amganset and East Hampton actually had interconnections for emergency purposes, but there was never any talk of merger.

MR. SCHICKLER: No.

MR. MULLIGAN: Historically, there hasn't been a trend towards merger, Mr. Buerle.

MR. BUERLE: Are these companies servicing a greater or lesser percentage of the area's population, than they were in the last twenty or thirty years?

MR. MULLIGAN: I don't really know. The small companies are serving a greater population because as you get a new development, the small companies serve them for awhile. The big companies have gone to municipal ownership, so that on the total-population-served basis, they probably are serving less than they did twenty years ago. Many of these small companies are formed to serve a real estate development. Every month we get two or three more applications from Environmental Conservation starting a company to serve some new area of the State. So that is a continuous thing—these companies are being formed and are going into operation.

CHAIRMAN CONWAY: Well, isn't it generally true that in the case of a subdivision where a developer of forty-five homes has to put in his own water system, the quickest thing he wants to happen is for the municipality to take over his water system?

MR. MULLIGAN: I think they encourage this in most places. We've always used a break-even point of 400 customers before it would pay to stay in business. Then you are talking fifty thousand dollars in revenues, and it might pay you to devote some time. There would be enough revenues at hand for you to take out some salaries for running the company and some fair return for your investment.

In Putnam County, one of the companies' revenues today are less than their taxes. So they are talking about a 250 per cent rate increase, because they have forty customers, revenues of three thousand dollars, and the town rates are thirty-two hundred dollars. Obviously, in such a small development you can't stay in business. Now they are talking about the town acquiring it; but if the town doesn't acquire it, it looks like they are going to get a 200 to 250 per cent increase, because there's only forty bodies to spread it over. That's the trouble with this system—they have very few customers to spread it over. The

impact per customer becomes really great.

There are great savings in large business due to the economies of scale. If you don't have a large number of customers, then you can't spread the costs.

CHAIRMAN CONWAY: I take it in subdivision development there is no attempt to view the owner's profits that he took out of the subdivision?

MR. MULLIGAN: Every case that comes to us, we determine how much of that investment was recouped from the real estate operation. We will make an investigation and ask him just how it was financed and charge it off against the real estate operation. Then we will deduct that from the investment company. We have a little company, Bevan Water Company, with a plant of one hundred thirty thousand dollars and original was only thirty thousand; a hundred thousand was recouped from real estate. So we allowed Bevan a thirty thousand dollars investment. Then, he is allowed operation expenses, whatever they might be. So in every case of rate determination we attempt to determine what the actual investment was.

MR. HENNIGAN: This issue has always been battling issues, and particularly when you have acquisition by a local municipality, and you have a windfall, people are always concerned.

MR. MULLIGAN: That's the real problem. You have the acquisition at fair value of the water system that may have been recouped in the sale price of the house. Now he runs the system, the municipality takes over, pays the fair value on the system which is recouped from the homeowner.

Hopefully, that doesn't happen too often in our cases. We have to approve acquisitions. We don't on condemnations–we only make a certification report. So, on a condemnation case, let's go back to Bevan Water Company, on the condemnation of it, you're going to do that differently. You are going to pay for that system, you are going to pay them a condemnation cost, and will have nothing to say about it. We will make the certification report as to what the original cost was, but the courts in many cases have gone by the value of the system, irregardless of how the owner financed that system. If he has title to it, he is entitled to the value of that system.

MR. HENNIGAN: I remember the Syracuse case.

MR. MULLIGAN: That was the big issue. That was a very controversial case.

MR. HENNIGAN: The judge upheld the condemnation award of eight million dollars. The real estate development–actually, that was a water company that was their investment–eight million, but the real estate developer had an investment of maybe only two million and the other six million was recouped from the houses, so you have a doubling effect.

MR. HENNIGAN: Do you feel that the rest of these large private water companies, with the possible exception of the U & I Woodhaven plant, are in business to stay unless something extraordinary happens?

MR. MULLIGAN: I think evidence in Citizens is that they actively fought the acquisition by the Great Neck Water Authority–twice. The first one went to the Department of Environmental Conservation. They turned it down and then it went to the courts. But they fought it because they wanted to stay in the water business. Now, they may have actively fought the amount of the bond issue. There was only a certain amount of money allocated. They might have been happy with that.

So I assume that had something to do with it. But they actively fought it. It's a funny thing, because there were significant expenses, and many other companies would be planning a big fight. I know Long Island fought this.

I guess they kind of won as an operating thing. But they actively fought that; they said they wanted to stay in the water business and Jamaica Water did, too. Jamaica Water may have had some philosophical changes. I don't know if the fight was actively as big but in 1964 when it was first passed to have a Nassau Authority, to take over the private companies. Assemblyman Wager sponsored the bill; it was passed, and vetoed by the Governor. They actively fought the acquisition.

MR. QUARTARARO: Would it basically be correct to say that these large companies originally were formed to sell water, and that the small companies basically were formed to sell houses?

MR. MULLIGAN: That's perfectly true and that really characterizes the difference. These companies were formed to sell water, and the smaller companies were involved with real estate.

CHAIRMAN CONWAY: Why is south Queens area served by two private companies?

MR. MULLIGAN: Historically, maybe they didn't have the facilities.

MR. SCHICKLER: The city, I think, was considering taking over Jamaica Water several times because there was always a question of where the money would come in.

MR. MULLIGAN: My point was, back in 1888, why did they draw that line and say we're going to have a private company service you. Although at one time, Citizen's Company served the whole north Queens area, all the way from Newtown, which was Elmhurst, all the way through. But they were acquired by the city. But now economically you are talking a lot of money. You are talking about reproduction of Jamaica Water which is about eighty million dollars.

Also Woodhaven presents another problem. The rates in Woodhaven are much lower than the city rates. When they take over Woodhaven, you are going to get another two hundred or three hundred per cent increase; I think the Jamaica rates may be just about comparable with the city rates.

But in Woodhaven, you will have the first case in history where there was a two hundred to three hundred per cent increase when the municipality takes over, if and when they do take over. The average customer in Woodhaven pays about $30 a year for water. It's an old system, pretty well depreciated, and really run down, to the bone, no frills. I mean their meter rate is only about 35 to 40 cents per thousand versus the city's 70 cents a thousand. So that's one of the problems I think that Woodhaven has in this aquisition is the water rates on the property.

Naturally, they wouldn't have to pay the bonds and come up with a capital fund of the city buried somewhere in the city budget but just the conversion to city rates will give a significant increase in rates.

CHAIRMAN CONWAY: Well, we really appreciate your coming. It was a most helpful and informative session.

MR. MULLIGAN: I will get that tabulation for you. I think we will do it for the five Nassau County companies. For all the big companies, their records are very accurate as to consumption per customer, and we can also break down Citizens and show you how lawn sprinklers have affected it. What I'm trying to say about lawn sprinklers, Mr. Conway, is that people put a lot of water on their lawns and I think we can manage to educate them to not put so much on the lawns.

I think that when you see the amount of water that some of those lawn sprinklers use, you'll be surprised. I'm talking about maybe 400 thousand gallons a year or maybe 500--half a million gallons a year poured on a lawn. They may pay two or three hundred dollars; they are rated 50 or 60 cents per thousand gallons.

I know that our chairman was impressed with the fact that if we had a little less waste of this product maybe we could cut down the present investment. His philosophy is that there is only so much capital in this country that can be allocated to things. Maybe you think that capital for "X" number of dollars should not be allocated.

CHAIRMAN CONWAY: It is very difficult to convince people who have philosophical arguments this particular year in southeastern New York, which is just short of a fifty year rainfall record about drought.

MR. MULLIGAN: Right, we have had a lot of rainfall, but it is remarkable the way the rainfall fell. I think in Merrick we ran into that. This is the highest year in history in usage because of the rain. They found that when it rains on Monday, on Friday and Saturday everybody is out there sprinkling again; so, it is incidence of rainfall—when it falls. I think May and June were kind of dry. Actually they weren't hurt too badly this year. In 1967, it was worse—some areas were hurt over the whole summer.

CHAIRMAN CONWAY: Well, we appreciate your coming. You have been most helpful and we would appreciate the metering studies.

CONCLUSION

CHAIRMAN CONWAY: Thank you for a very informative presentation. The metering studies you mentioned should prove quite helpful. Once again thank you for an excellent presentation.

APPENDIX A

ATTENDANCE

SOUTHEAST WATER SUPPLY COMMISSION

Commissioners
E. Virgil Conway, Chairman
Neil H. Handerson
Herman Forster
Gerald R. O'Brien
Anthony M. Quartararo
William J. Schickler

Staff
Robert D. Hennigan, Executive Director
David Buerle, Director, Management Studies and Analysis
Steve Lackey, Assistant Director
David Duffy, Administrative Assistant
Irene Baker, Public Relations
Leslie Van Derzee, Research Associate

PUBLIC SERVICE COMMISSION

Robert J. Mulligan, Director of Water Division, New York State Public Service Commission
John F. Guastella, Deputy Director of Water Division, New York State Public Service Commission

Observer
Samuel Gofseyeff, New York City Board of Water Supply

DEPARTMENT OF TRANSPORTATION

OCTOBER 14, 1971
Albany, New York

DEPARTMENT OF TRANSPORATION

CONFERENCE

OPENING REMARKS

CHAIRMAN CONWAY: We are glad to have Mr. Joseph Stellato and Mr. Henry Zywick here today representing the Department of Transportation. We are meeting with all of the State agencies that may have a relation between the study which we have undertaken concerning the water supply needs in Southeastern New York for the next fifty years. I know that your agency is involved in water supply problems, if not directly, at least indirectly. I would like to turn this meeting over to you for your presentation.

PRESENTATION

MR. JOSEPH R. STELLATO, Director, Waterways Maintenance Subdivision, Department of Transportation: We were told there would be some questions about Hinckley so we have brought Mr. Zywiak who has the immediate supervision of the operation and knows the details. I have a short statement which will give you an idea of our water supply interests.

The Department of Transportation operates and maintains the New York State Barge Canal System and has an interest in the water supply needs of Southeastern New York.

Our function includes the control and/or regulation of Oneida Lake, the Mohawk River, and the Hudson River. The water sources of the eastern section of the Erie Canal, extending from Three Rivers to Waterford consist of 13 reservoirs, constructed for the purpose of supply to the Summit Level of the Erie Canal. Diversion from the Hudson River supplies the Summit Level of the Champlain Canal.

The Department operates the Barge Canal System in accordance with the Canal Law, Laws of 1939, Chapter 542.

The operation of the Canal will require the continued use of its present water supply. The Department does allow the use of waters surplus to navigation by license or permit.

We maintain a number of records for water control and operation. These records include discharge records from the reservoirs, and water elevation records at locks and other locations.

The Department will allow the use of these records. We will respond to specific requests identifying the area of data required by the Commission.

The present water supply of the Barge Canal appears sufficient. Should an increase in water needs be occasioned by major improvements to the Canal, the need would probably be satisfied by the recirculation of water.

DISCUSSION

CHAIRMAN CONWAY: If Hinckley reservoir redevelopment became a part of our recommendations for supplementing streamflow in the Hudson River, it seems to me that your Department will have to become directly involved in any plans of that nature.

MR. STELLATO: I would think so. However, it probably wouldn't interfere with the operation of the Canal if you're pumping out of the Hudson downstream.

MR. ZYWIAK, Regional Waterways Maintenance Engineer for the Utica Office:

I can fill you in on the operation of the reservoir. It was built for canal purposes under the Canal Law to furnish water supply for the canal. However, there is an agreement with Niagara Mohawk Corporation to regulate discharge from the reservoir for power purposes. This agreement was made in the early 1920's. Releases are based on a family of curves relating to the day and month of the year and reservoir storage. The City of Utica takes approximately 100 cfs for water supply needs.

These agreements were made prior to the construction of the dam, because Niagara Mohawk had water rights prior to ours and the city had its own small reservoir upstream from the Hinckley Reservoir. Furthermore, when the state built the dam they had to buy an appropriate lot of land, most of which was Niagara Mohawk's. The initial agreement was that the power company would use the water for power generation purposes. Later, the

agreement was modified about seven years after the dam was built (1922), to better regulate the flow. It works very well for both parties. There are other agreements, such as maintaining a minimal flow of 335 cubic feet per second in West Canada Creek based on the lowest flow in West Canada Creek prior to the construction of the reservoir.

Furthermore, a state park is being built here. I don't know the population around the shore line, but it's not heavily populated. The state did buy a certain perimeter around the shore line for high water so they would not be subject to flood claims and erosion.

Generally, in operation, we use the regulation chart adding water for the navigation season, which is roughly from the middle of April to around the 7th of December. In the winter, we have no water needs for navigation, and we follow that chart exclusively.

We draw down the reservoir to catch the spring rains. Capacity is adequate for the spring water rains, and it is large enough to handle the canal needs so there is no need of expansion for our purposes. We've never had any problems as far as having sufficient water supply for the canal. Our needs are around 600 cfs, during the navigation season. At the end of the navigation season, these movable dams you see in the Mohawk River are raised in the horizonal position and left open. The effect is to let the river run as a natural stream. I have one more comment on the power companies. Their generating capacity is somewhere around 1600 cfs. Any water above that amount is not used for power generation.

MR. HENNIGAN: There has been a number of projects suggested for the upper Hudson which have the purpose of maintaining sufficient flow in the Hudson River at Hyde Park so that a major water withdrawal could be made for water supply purposes.

One of the proposals, for instance, was to take water from Lake Ontario, lift it to Oneida Lake, relift it over the divide into the Mohawk River, and let if flow down the Mohawk to the Hudson. Another one was to dam up the upper reaches of the Black River at Forestport, and divert water into the outlet stream from Hinckley just below Hinckley Reservoir. There was another proposal to take water from Lake Champlain, run it back over the divide and let it run down the Hudson River. Another proposal involved a reservoir on the Hoosic River, which would provide storage again with the idea to provide better stream regulation in the Hudson. The major proposal which is of interest here is the scheme to expand Hinckley Reservoir. This calls for reconstruction on the same site to impound more water. The idea being to provide a major regulating reservoir for water supply purposes. Consequently, Hinckley is of great interest, to this Commission, and this directly involve you people.

If this Commission made recommendations that a new dam be constructed at the Hinckley location to provide more storage for regulating flow in the Hudson River, what kind of problems would we have? You have already mentioned the requirements for water supply for Utica and power generation for Niagara Mohawk. Is the Utica water supply intake in the reservoir proper?

MR. STELLATO: Yes.

MR. HARDING: There is a second dam below the big dam; what is its purpose?

MR. ZYWIAK: It's a stilling poll for the power company, and irons out fluctuations in flow.

There are two generating stations, Trenton Falls and Prospect. The generating facilities are at the lowest dams, not the upper dam. The heat for power generation is provided by their own dams? They do not work off the reservoir elevation. Furthermore, no water is diverted; these are on stream stations.

MR. QUARTARARO: Since Niagara Mohawk puts the water back in the canal system, your requirements during the navigation season automatically take care of their requirements. Is this correct?

MR. STELLATO: That is correct. Furthermore, a taking downstream on the Hudson River shouldn't interfere with navigation uses either.

MR. HENNIGAN: For instance, if this Commission recommended that this facility be built, could the Department of Transportation be the agency that would build and operate this facility? Would you need the additional legislation?

MR. STELLATO: I would say we would need additional legislation because the canal law limits our activity to navigation.

MR. HENNIGAN: It would be a multi-purpose impoundment to meet the navigation needs of the canal, to meet the water supply needs in terms of volume

downstream in the Hudson River, and maybe recreation. This is a proposal that has been raised and it is attractive for a number of reasons. (1) The presence of the existing dam will moderate any arguments about a site. (2) The site is outside the Adirondack Park. (3) the impoundment is already part of an operating system. It seems it would be relatively simple to increase the size of the dam at that site.

MR. STELLATO: I would say that as long as the navigation interest of the Barge Canal system was protected, I don't see where there would be any interference with the Department. In reference to water supply, the only thing I can think of that might interfere with navigation is increasing the current in the stream so that you couldn't navigate. There is one other thing, during the winter, as Henry points out, we pull thos movable dams and the water gets quite low in the Mohawk, and we get icing. How this would affect your water supply if you wanted to draw water through the winter months might be an engineering problem to be considered. We in the Department have never investigated the possibility of increasing Hinckley. We don't know whether it can be done or not. We expect your people have looked into that.

MR. HENNIGAN: Well, it hasn't been investigated very thoroughly. But it has been raised as a possibility and at a first glance it looks like it's feasible.

CHAIRMAN CONWAY: Any report coming out of this Commission is going to have to point out and make recommendations as to where additional water supply can be obtained and Hinckley is certainly one possibility. As Bob Hennigan pointed out, for a number of reasons it is a very good possibility among the other possibilities.

MR. STELLATO: It has potential but you wouldn't naturally know really what its potential is until the study was made. Could you tell me roughly in cubic feet per second or gallons what volume you are talking about?

CHAIRMAN CONWAY: Roughly 500 million gallons per day, to eventual use of one billion gallons per day. Somebody's got to determine whether the Mohawk River and the Barge Canal can take it or not.

MR. HARDING: How old is the present dam?

MR. STELLATO: It was built in 1915, 56 years ago.

CHAIRMAN CONWAY: Do you have any idea how many people live around the reservoir?

MR. ZYWIAK: About two thousand, most are on private land. We have pretty good control on Hinckley. However, additional water demands would dislocate these people for water storage. At the present time there is sufficient water to meet all the demands.

MR. HENNIGAN: Did you get into trouble during the '60's drought?

MR. STELLATO: No, but you may be interested in the Army Corps of Engineers' report on expansion of the Canal. It goes into water supply needs and other issues.

MR. MERKENS: One proposal has been advanced to withdraw only during the wet time of the year, 4 to 6 months. Would canal and reservoir operation work against this?

MR. ZYWIAK: I don't think so. We draw down in late winter to catch the spring run-off, but there's more water than you can use then anyway.

MR. QUARTARARO: How big is the reservoir?

MR. ZYWIAK: Well, the reservoir itself is 4½ square miles, maximum depth 75 feet, average depth 28 feet. It has a pretty good size watershed, 372 square miles and the dam is 3300 feet long earthfill dam, maximum heigh 56 feet. There is a 400 foot mason concrete spillway. We have four gates. Capacity is 3½ billion cubic feet when filled; crest is 1225 feet elevation. In the winter we get close to 1185 feet or 1183 feet elevation. Below 1183 feet we usually get a call from the city saying their water is getting murky. We try to hold it around there but this winter we drew it down lower. In fact, it has been drawn down as low as 1175 feet, 50 feet below the crest.

MR. STELLATO: The Mohawk sometimes becomes completely iced over during the winter and this may pose soem problems if you were relying on it for water supply during the winter.

MR. ZYWIAK; There have been some problems; it's a problem that must be evaluated in your considerations.

MR. MERKENS: Is there any present recreation use?

MR. ZYWIAK: Yes, fishing; in addition the Department of Conservation has a permit for a state park. They are constructing at the present time and a couple of bath houses are completed. I would assume they will open up a portion of it this summer and still continue to develop it further. They are building roads and camps.

There are people with camps, and some live year round. Very few business places. The Conservation Department is also building a boat launching site. It is only half an hour from Utica, so there is great potential recreational use.

MR. HENNIGAN: Is this state park a major operation and does it include a portion of the shoreline of the reservoir?

MR. ZYWIAK: Yes, I would say so.

MR. MERKENS: Do you allow power boating?

MR. ZYWIAK: Yes.

MR. HENNIGAN: You do not restrict the use of the reservoir for recreational purposes?

MR. ZYWIAK: We have certain controls and have given the conservationist departments a permit to use the land. It's state land, about half of it, and then they bought some additional land. They have a permit to use the land. Anybody on the shoreline can go buy a permit.

CONCLUSION

CHAIRMAN CONWAY: Thank you very much for making an excellent presentation. The meeting is adjourned.

APPENDIX A

ATTENDANCE

SOUTHEAST WATER SUPPLY COMMISSION

Commissioners
E. Virgil Conway, Chairman
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DEPARTMENT OF TRANSPORTATION

Joseph R. Stellato, Director of Waterways Maintenance Subdivision
Henry Zywiak, Regional Waterways Maintenance Engineer for the Utica Office